

GAO

United States General Accounting Office

Report to the Chairman, Subcommittee on
Oversight and Investigations, Committee
on Energy and Commerce
House of Representatives



LM132153

December 1986

ENERGY MANAGEMENT

Effects of Recent Changes in Department of Energy Patent Policies



Released

~~RESTRICTED~~ — Not to be released outside the General
Accounting Office except on the basis of specific approval
by the Office of Congressional Relations.

GAO/RCED-87-5

537666

132153



United States
General Accounting Office
Washington, D.C. 20548

**Resources, Community, and
Economic Development Division**

B-220911

December 31, 1986

The Honorable John D. Dingell
Chairman, Subcommittee on Oversight
and Investigations
Committee on Energy and Commerce
House of Representatives

Dear Mr. Chairman:

As you requested we have examined various issues associated with changes in Department of Energy (DOE) policies relating to the retention of patent rights to inventions developed at government expense. These changes, which resulted from legislation passed by the 98th Congress and from a February 1985 DOE policy statement, will allow the majority of contractors who operate DOE's government-owned, contractor-operated facilities to retain title to many of the inventions developed at these facilities.

You were interested in how the new patent policies compare with DOE's past policies and how the changes in policy will affect the commercialization of inventions developed at DOE's contractor-operated facilities as well as the performance of DOE's mission-related work by the contractors that operate them. (See apps. II-V.) You were also interested in how DOE considered the effects of its patent policies on competition and market concentration.

In addition, you asked us to respond to six legal questions relating to: how DOE and contractors may use royalties resulting from inventions that are commercialized (see apps. VI-VIII), what authority DOE has for correcting situations where its patent policies have produced anticompetitive results (see app. IX), and whether DOE must treat as confidential the reports it receives on how patented inventions are being used. (See app. X.)

You also asked us to examine the major provisions of a proposed patent agreement between DOE and Martin Marietta Energy Systems, operator of DOE's Oak Ridge, Tennessee, and Paducah, Kentucky, facilities to determine how the agreement would affect Martin Marietta Energy Systems' ability to obtain title to inventions developed at the facilities. (See app. XI.)

DOE's new patent policies should decrease the time it takes contractors to obtain title to laboratory inventions. However, because DOE's patent policies have not yet been completely formulated or implemented, it is too soon to tell how they will affect commercialization of inventions developed at the DOE-owned, contractor-operated facilities. In addition, until the policies have been implemented, it is difficult to assess to what extent these policies will produce anticompetitive results or disrupt contractor performance of mission-related work at the facilities. Our observations and conclusions on the potential effects of the patent policy changes are discussed in greater detail below, along with our responses to the other questions you asked.

Background

The changes DOE is making to its patent policies have been designed to improve commercialization of laboratory inventions conceived at DOE's contractor-operated facilities. These changes, mandated in part by Public Law 96-517, the Patent and Trademark Amendments Act of 1980, as amended, set forth patent policies relating to inventions developed by small businesses and nonprofit firms.¹ In February 1985, the Secretary of Energy issued a memorandum on departmental patent policy which, among other things, changed the way for-profit contractors can obtain title to inventions. These changes will permit the majority of nonprofit and for-profit contractors who operate DOE facilities to receive title to many laboratory inventions without first having to obtain DOE approval.² However, as of September 15, 1986, DOE had not implemented the new policies. DOE plans to implement these policy changes after the final regulations implementing Public Law 96-517, as amended, are issued.

These changes in patent policy are aimed at addressing criticisms of DOE's past policies. Under past policies, the government retained title to inventions that were conceived at DOE contractor-operated facilities and developed with federal funds. DOE commercialized these inventions by obtaining patents on the inventions and issuing licenses to firms or individuals. However, contractors who operated the DOE facilities and their employees could request DOE to waive the government's ownership of specific inventions if the contractor or employee wished to obtain title to the invention. In such cases, the contractors or employees had to file

¹No DOE contractor-operated facilities are operated by small businesses.

²As discussed in appendix I, contractors who operate DOE facilities will still have to obtain DOE's approval to receive title to some types of inventions, such as ones developed as part of DOE's defense program activities.

waiver petitions with DOE describing how they planned to commercialize the invention. Some contractors have cited DOE's delays in granting their waiver requests as a primary reason why they were unable to successfully commercialize laboratory inventions.

Even though DOE is changing its patent policies, it has expressed concern that allowing contractors who operate DOE-owned facilities to retain title to inventions could have adverse effects upon the research and development mission of its facilities. DOE said that the commercial incentives created by allowing such contractors to retain title to inventions could distract contractors from performing their principal mission by diverting the contractors' or their employees' attention to commercial activities. Contractors believed, on the other hand, that allowing them to retain title to inventions without having to file waiver requests would improve their ability to commercialize inventions without adversely affecting their ability to perform mission-related work.

Effects of the Policy Changes— GAO Observations and Conclusions

Because DOE's new patent policies have not yet been implemented, we cannot evaluate precisely how they will affect commercialization of inventions, competition in the marketplace, and mission-related work at the facilities. We can, however, make some observations about the potential effect of the policy changes.

While DOE's patent policy changes should decrease the time it takes for contractors to obtain title to many inventions developed at DOE-owned, contractor-operated facilities, we cannot forecast to what extent this will increase commercialization of these inventions. We found that DOE's practice of requiring contractors who operate DOE's facilities to obtain DOE's approval before taking title to individual inventions generally resulted in delays of 1 year or more from the time contractors filed requests until they were approved. These delays may have affected contractors' ability to commercialize some inventions to which they acquired title and may have dissuaded some contractors from requesting title to some inventions.

The extent to which the new policies will result in increased commercialization of inventions depends, of course, on such things as the number of inventions to which DOE's contractors retain title, their success in commercializing those inventions, and the extent to which their commercialization efforts produce funds (royalties) that will be used for commercializing other inventions developed at DOE's facilities. Because of the time involved in successfully commercializing inventions, it will

be several years before the effects of DOE's new patent policies on invention commercialization can be accurately assessed.

Because DOE was still developing procedures and controls associated with the new patent policies, we could not assess the effects of the changes on competition and on contractors' performance of mission-related work. For example, effects on competition and market concentration will depend on

- the nature and commercial value of inventions developed,
- the extent to which contractors obtain title to the inventions, and
- the basis on which inventions are licensed.

Effects on contractor performance of mission-related work are likely to depend on (1) the size of financial rewards that contractors who operate DOE's facilities and their employees may receive from commercializing inventions and (2) how effective DOE's controls will be in preventing the financial incentives that may arise under the new patent policies from adversely affecting facility operations.

Legal Issues

Regarding the legal questions you asked, we found that the provisions of the Patent and Trademark Amendments Act of 1980, as amended, Public Law 96-517, give DOE considerable flexibility in establishing royalty provisions for inventions it licenses, including whether or not to charge royalties to licensees. Thus, DOE is not precluded from issuing royalty-free licenses or deferring the collection of royalties on licenses.

One of DOE's for-profit contractors, Martin Marietta Energy Systems, submitted a proposal under which it would obtain an advance waiver covering many inventions developed under its contract with DOE to operate DOE's facilities at Oak Ridge, Tennessee, and Paducah, Kentucky. In return, royalties that Energy Systems receives from licensing the inventions would be used to perform technology transfer initiatives on DOE projects at the facilities. DOE has stated that it plans to enter into a cost-sharing arrangement with Energy Systems for the purpose of using such royalties at the facilities.

You asked whether the arrangement between Energy Systems and DOE would violate restrictions on DOE's augmenting its appropriation. Provisions contained in 31 U.S.C. 3302 are intended to prevent agencies from augmenting their appropriations by receiving funds from nongovernment sources and retaining them for use in their programs. Under the

proposed arrangement, it appears that DOE will not actually receive the royalty funds to be used for technology transfer, but rather they will be retained by Energy Systems.

Energy Systems activities under the agreement do not constitute a prohibited augmentation of DOE's appropriations. Energy Systems, as part of the cost-sharing arrangement, will use the royalties toward commercialization of inventions. In doing so, it will advance its own interests as well as promote DOE's interest in furthering technology transfer. While the encouragement of technology transfer has been sanctioned by both the Congress and the administration, there is no requirement that this be accomplished solely through the use of the agency's appropriated funds. Accordingly, there would be no violation of law.³ However, since this arrangement has not been completed and is subject to change, our view on its legality may change.

Regarding the use of royalties received from inventions developed at DOE facilities to which nonprofit contractors retain title, we found that Public Law 96-517, as amended, requires that such royalties be used by contractors for scientific research, development, and education consistent with the mission of the facility (apart from those that must be paid to the U.S. Treasury). This allows, but does not require, the royalties to be used at the facility itself.

You asked whether DOE still has statutory authority to require a contractor to issue licenses to other parties if DOE finds that the contractor's efforts to commercialize an invention developed at a DOE facility have tended to lessen competition. We found that DOE no longer has statutory authority to terminate patent waivers on such grounds.

You also asked whether Public Law 96-517, as amended, requires DOE to withhold invention utilization information reported to it. We found that this act requires DOE to withhold invention utilization information from public disclosure for nonprofit and small business contractors but not for large for-profit contractors. Further discussion of this issue as well as the other legal issues can be found in appendixes VI through X.

³While under the arrangement, DOE may receive royalties in certain circumstances, no augmentation will occur if the royalties are deposited in the U.S. Treasury as miscellaneous receipts. (See app. VII.)

DOE's Negotiations With Martin Marietta Energy Systems

In 1984 negotiations took place between DOE's Oak Ridge operations office and Martin Marietta Energy Systems, operator of DOE facilities at Oak Ridge, Tennessee, and Paducah, Kentucky. These negotiations led to the development of a proposed advance waiver agreement under which DOE would waive to Energy Systems title to all inventions developed under Energy Systems' contract to operate these facilities except for inventions in certain classes of technology. Besides the appropriation augmentation issue discussed above, you also asked us to examine the major provisions of this agreement. Appendix XI provides our analysis. Negotiations between DOE and Energy Systems have been suspended until DOE issues class patent waivers setting forth provisions governing ownership of inventions at all of its facilities operated by for-profit contractors.

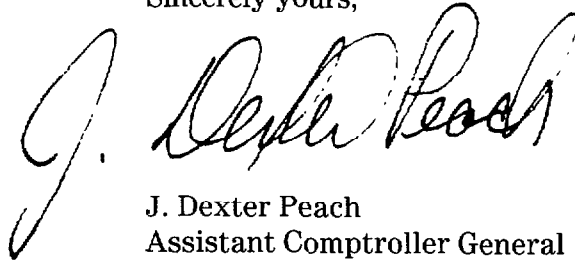
Methodology

To address the issues you raised, we reviewed DOE's patent policies and procedures. We reviewed patent requests filed between October 1977 when DOE was established and December 1985 by contractors that operate DOE-owned facilities. We reviewed in detail requests filed by the three contractors who submitted the largest number of requests to obtain title to inventions—the University of California, Martin Marietta Energy Systems, and Stanford University—and we discussed with the contractors how they attempt to commercialize inventions developed at the facilities they operate. We also discussed the changes in DOE policies with officials in DOE headquarters, its Albuquerque, New Mexico, San Francisco, California, and Oak Ridge, Tennessee, operations offices. We also talked with contractor employees at facilities operated by the University of California (Los Alamos National Laboratory, Lawrence Berkeley Laboratory, and Lawrence Livermore National Laboratory), and by Martin Marietta Energy Systems (DOE facilities in Oak Ridge). We obtained the opinion of our General Counsel on the legal issues you raised. We also reviewed DOE negotiations with Martin Marietta Energy Systems concerning title to inventions developed at the DOE-owned facilities Martin Marietta operates. A more detailed description of our objectives, scope, and methodology appears in appendix I.

We discussed the factual information in this report with agency officials and have included their comments where appropriate. However, as you requested, we did not obtain official agency comments on a draft of this report. In addition, as arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this

report until 30 days from the date of this letter. At that time, we will send copies to the Secretary of Energy and other interested parties.

Sincerely yours,

A handwritten signature in black ink, appearing to read "J. Dexter Peach". The signature is written in a cursive style with a large initial "J".

J. Dexter Peach
Assistant Comptroller General

Contents

Letter		1
Appendix I		12
Background,	Background	12
Objectives, Scope, and	Objectives, Scope, and Methodology	18
Methodology		
Appendix II		22
The Effect of DOE's	Requester's Question:	22
Historical Patent	Effects of the Waiver Process on Contractor Ownership of	22
Policies on	Inventions	
Commercialization of	Views of DOE and Contractor Officials on Invention	25
Technology	Commercialization	
	Observations and Conclusions	28
Appendix III		30
Contractor	Requester's Question:	30
Commercialization of	Effect of the New Patent Policies on Technology Transfer	31
Laboratory Inventions	Observations and Conclusions	35
Appendix IV		37
DOE's Consideration of	Requester's Question:	37
the Effect of Its Patent	Background	37
Activities on	Effect of Changes in DOE Patent Policy on Its	38
Competition	Consideration of Competition	
	Observations and Conclusions	41
Appendix V		43
DOE's Concerns	Requester's Question:	43
Regarding the Effect of	Background	43
Patent Policy Changes	Effect of the New Patent Policies on GOCO Operations	45
on Its GOCOs	Controls to Prevent Problems Resulting From the New	50
	Policies	
	Observations and Conclusions	51

Appendix VI		53
DOE's Practices for Charging Royalties for Inventions It Licenses	Requester's Questions:	53
	Background	53
	DOE's Discretion to Charge Royalties	54
Appendix VII		56
DOE's Use of Martin Marietta Energy Systems' Royalties to Perform Mission Work	Requester's Question:	56
	Background	56
	Contractor's Use of Royalty Income	57
Appendix VIII		60
Nonprofit and Small Business GOCO Contractors' Use of Royalty Income	Requester's Questions:	60
	Background	60
	Contractors' Use of Royalties	61
Appendix IX		62
DOE's Authority to Take Action Against GOCO Contractors Whose Licensing Practices Have Produced Anticompetitive Effects	Requester's Question:	62
	Background	62
	Use of March-In Rights	62
Appendix X		63
DOE's Authority Regarding Invention Utilization Reporting	Requester's Questions:	63
	Background	63
	Invention Utilization Reporting	63

Appendix XI		65
DOE's Negotiations	Requester's Question:	65
With Martin Marietta	Background	65
Energy Systems	Provisions Contained in the Draft Advance Patent Waiver	65
Concerning Patent		
Policy		

Tables	Table II.1: List of GOCOs Responding to GAO Questionnaire	27
	Table II.2: DOE Laboratory Responses	28
	Table III.1: Licenses Issued for Inventions at Three University of California Laboratories, January 1983 to December 1985	33

Abbreviations

DOE	Department of Energy
GAO	General Accounting Office
GOCO	government-owned, contractor-operated facility
OMB	Office of Management and Budget
P.L.	Public Law

Background, Objectives, Scope, and Methodology

Background

The Department of Energy (DOE) is changing the patent policies it uses for inventions developed at its government-owned contractor-operated (GOCO) facilities. Traditionally, DOE's policies have been carried out under provisions set forth in the Atomic Energy Act of 1954 and the Federal Nonnuclear Energy Research and Development Act of 1974 (Nonnuclear Act). These acts generally provided for government ownership of inventions developed under DOE contracts. However, the acts set forth provisions allowing DOE to waive its title to inventions, thereby allowing firms to commercialize inventions conceived at DOE's laboratories. The acts also required DOE to consider competition and market concentration when granting patent waivers.

The recent changes in DOE's patent policy are based, in part, on legislative provisions contained in Public Law 96-517, the Patent and Trademark Amendments Act of 1980, as modified by Title V of Public Law 98-620. Together, these acts superseded provisions in the Atomic Energy Act and the Nonnuclear Act relating to ownership of inventions developed by nonprofit and small business firms.

In February 1985, the Secretary of Energy further revised DOE's patent policies by, among other things, modifying patent policies DOE used for inventions developed at GOCO facilities operated by for-profit contractors. As discussed below, the changes in patent policy include: (1) revisions in the waiver process, which contractors have had to use to obtain title to inventions developed at GOCO facilities, (2) changes in the requirements placed on DOE for considering effects of its patent activities on competition and market concentration, and (3) other factors, including changes in the way patent royalties and commercialization costs will be handled.

Changes in DOE's Waiver Policies

The changes in DOE's patent policies will revise the ways in which contractors obtain title to GOCO inventions. DOE uses several types of waivers to transfer invention titles to its contractors: advance waivers, class waivers, and identified invention waivers. An advance waiver, granted to a contractor at the time of contracting, automatically gives the contractor patent rights to some or all inventions conceived under the contract covered by the waiver. A class waiver is used to allow contractors or other parties to obtain rights to a group or class of inventions. An identified invention waiver allows contractors to request DOE, through a petition process, to waive its ownership of a particular invention conceived under a DOE contract.

While DOE has not used advance waivers in its GOCO contracts, GOCO contractors have used the identified invention waiver process to obtain title to inventions developed at the GOCOs. DOE has also allowed GOCO employees to request identified invention waivers for inventions they develop. As discussed later, DOE plans under its new patent policy, to use class waivers so contractors can obtain title to broad classes of inventions.¹

DOE's Identified Invention Waiver
Process

The identified invention waiver process that GOCO contractors have used to obtain title to inventions involves the following steps:

1. The GOCO contractor submits a patent waiver petition for a specific contract invention to the DOE patent counsel with contract responsibility in the DOE operations office which oversees the work at that GOCO. The petition provides information on, among other things,

- the investment or effort necessary to promote commercial utilization of the invention,
- how the waiver would effectively promote the commercialization of the invention, and
- the effect the waiver would have on competition and market concentration.

2. Each operations office's patent counsel analyzes the waiver request according to criteria specified in DOE's regulations and prepares a "statement of considerations" supporting the counsel's recommendation to accept or reject the petition. This statement addresses issues such as,

- the extent to which a waiver is necessary to attract private investment to commercialize the invention;
- the extent to which the plans, intention, and ability of the contractor or inventor will result in expeditious commercialization of the invention;
- the extent to which the government intends to further develop the invention to the point of commercial utilization; and
- the likely effect of the waiver on competition and market concentration.

3. The statement of considerations is sent to DOE's Assistant General Counsel for Patents at DOE headquarters in Washington, D.C., who has been delegated waiver determination authority. The Assistant General

¹DOE has used class waivers in the past to allow certain parties, such as ones that fund work carried out at DOE facilities, to obtain title to inventions.

Counsel also obtains concurrence from the appropriate DOE program organization in determining whether to approve or deny the waiver.²

4. After being signed by the Assistant General Counsel and the director of the relevant program organization, the statement of considerations is returned to the appropriate DOE operations office. An approved waiver becomes effective on the date the operations office notifies the contractor of the approval. Once a contractor has obtained title to an invention, it is responsible for commercializing the invention. Generally, this is done by issuing a license(s) to firms that wish to market the invention.

DOE's New Policies

On February 5, 1985, the Secretary of Energy issued a policy statement reflecting changes enacted under Title V of Public Law 98-620. Title V revised a provision of the Patent and Trademark Amendments Act of 1980 (P.L. 96-517, 35 U.S.C. 202 (a)) relating to inventions developed under funding agreements covering GOCOs. This provision had allowed agencies to exclude GOCO inventions from the law's general requirement that small business and nonprofit contractors be allowed to retain title to inventions resulting from federally funded research and development.

DOE had used the exemption contained in Public Law 96-517 to keep its nonprofit GOCO contractors from retaining title to inventions developed at the GOCOs. Instead, as described earlier, GOCO contractors were required to ask DOE to waive the government's ownership of individual inventions if the contractors wished to obtain title to them. Following the enactment of Public Law 98-620, small business and nonprofit GOCO contractors will be permitted to retain title to inventions except in certain situations such as

- exceptional circumstances when an agency determines that the policy and objectives of Public Law 98-620 would be better promoted by restricting or eliminating the right of contractors to retain title to inventions and
- in GOCO contracts covering DOE facilities primarily dedicated to naval-nuclear propulsion or weapons-related programs.

The Secretary of Energy's February 5, 1985, policy statement expanded on the provisions of Public Law 98-620 by establishing four "class

²Whenever a requested determination has been denied, the requester may, within 30 days, request reconsideration.

waivers” that would facilitate contractors’ ability to obtain title to inventions. Two of the four class waivers apply to GOCO contractors:

1. A class waiver for nonprofit and small business GOCO contractors covering commercial uses of identified inventions arising in “exceptional circumstance” technologies, provided that the contractor certifies that it intends to commercialize the invention.³ DOE plans to define technologies that fall into the following categories as exceptional circumstance technologies:

- Uranium enrichment.
- Civilian high-level radioactive waste.
- Classified inventions and unclassified inventions that are sensitive, such as those developed by contractors performing work for DOE’s naval-nuclear propulsion or weapons-related programs.

2. A class waiver for for-profit GOCO contractors for (1) all identified inventions falling outside the exceptional circumstance technologies and (2) commercial uses of inventions arising in exceptional circumstance technologies. This waiver does not include for-profit GOCO facilities primarily dedicated to DOE’s naval-nuclear propulsion or weapons-related programs.

The for-profit class waiver reflects the provisions of the President’s February 18, 1983, memorandum on government patent policy, which states:

“To the extent permitted by law, agency policy with respect to the disposition of any invention made in the performance of a federally-funded research and development contract . . . shall be the same or substantially the same as applied to small business firms and nonprofit organizations”

While the class waivers will allow GOCO contractors to obtain title to many GOCO inventions, certain types of inventions will be excluded. A DOE task group formed in November 1984 identified 11 nonprofit GOCO contractor locations at which contractors could be allowed to elect title to all inventions and 3 at which contractors could be allowed to elect title to all inventions except in defense program and naval-nuclear propulsion activities. The DOE task group identified 9 GOCO contractor locations at which for-profit contractors could elect title to all inventions, 4

³Contractors may apply for waivers to inventions arising in an exceptional circumstance technology under DOE’s authority in the Nonnuclear Act.

at which they could elect title to inventions except those in defense program and naval-nuclear propulsion activities, 2 which would be excluded from the class waivers because the contracts cover exclusive defense/naval-nuclear propulsion missions, and 12 with primary defense/naval-nuclear propulsion production missions for which decisions would be deferred until DOE obtained additional experience under the new patent policies.

DOE's Consideration of Competition

Under provisions contained in the Nonnuclear Act, DOE has been responsible for carrying out several activities relating to the effect of DOE patent policies on competition and market concentration. These requirements related to (1) granting waivers to contractors, (2) the issuing of exclusive licenses, and (3) using march-in rights.

The Nonnuclear Act states that when making determinations on whether to grant patent waiver requests, one of the Secretary of Energy's objectives shall be "... fostering competition and preventing undue market concentration or the creation or maintenance of other situations inconsistent with the antitrust laws." The act also specifically requires the Secretary to consider the likely effect on competition and market concentration of granting identified invention and advance waivers.

The Nonnuclear Act also contained provisions relating to the effects of DOE's licensing decisions on competition. These provisions essentially required that DOE issue exclusive licenses to government-owned inventions only in cases where nonexclusive licenses would not effectively promote the inventions' commercialization.⁴

In addition to the provisions cited above, the Nonnuclear Act contained provisions allowing DOE to take actions in situations where its waiver or licensing actions had "... tended substantially to lessen competition or to result in undue market concentration in a section of the United States in any line of commerce to which the technology relates." These provisions, which are generally referred to as march-in rights, authorized DOE to require the granting of nonexclusive or partially exclusive licenses or to terminate waivers or licenses, under certain circumstances, if it determined that the anticompetitive situations described above took place.

⁴Exclusive licenses allow a firm or individual the sole right under a patent to commercialize the invention. Nonexclusive licenses may allow many firms or individuals the right to commercialize the invention.

In addition to the legislative requirements pertaining to competition discussed above, the Department of Energy Organization Act contains general requirements pertaining to competition. Included in the act's provisions is a requirement that the Secretary of Energy assign to an Assistant Secretary responsibilities for competition, including the promotion of competition in the energy industry. DOE has assigned these responsibilities to the Assistant Secretary for Congressional, Intergovernmental, and Public Affairs, who delegated these responsibilities to the Director of the Division of Competition. The Division's primary responsibility regarding DOE's patent policies has been to review all exclusive licenses issued by DOE.

Changes to the Way DOE Considers Competition

Public Law 96-517, as amended, changed several provisions in the Non-nuclear Act relating to: (1) granting waivers to contractors, (2) issuing exclusive licenses, and (3) using march-in rights.

Under Public Law 96-517, nonprofit and small business⁵ contractors have an automatic right to obtain title to most contract inventions without having to submit waiver requests to DOE. Thus, the ability of such contractors to obtain title to such inventions will not be subject to the considerations relating to competition contained in the waiver provisions of the Nonnuclear Act.

Public Law 96-517, as amended, also repealed provisions contained in the Nonnuclear Act which required agencies to consider competitive effects when issuing exclusive licenses when the government retains title to inventions. However, it established new provisions similar to those which it repealed. These provisions require that before granting an exclusive license, DOE and other agencies must determine, among other things, that the desired practical application has not been or is not likely to be achieved expeditiously under a nonexclusive license. The law also states that a federal agency shall not grant an exclusive or partially exclusive license

"... if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the country in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with the antitrust laws."

⁵Small business is defined by Public Law 85-536, as amended, and implementing regulations of the Administrator of the Small Business Administration.

In addition to the above-mentioned changes, the march-in provisions relating to waivers and licenses contained in the Nonnuclear Act were repealed by Public Law 96-517. Public Law 96-517, as modified by Public Law 98-620, established its own march-in provisions for all contractors who have received title to inventions developed under federal funding agreements. These provisions do not authorize march-in for anticompetitive reasons.

Other Changes to DOE Patent Policy

In his February 5, 1985, policy memorandum discussing revisions to DOE's patent policies, the Secretary discussed how DOE should handle two issues related to small business and nonprofit GOCO contractors retaining title to laboratory inventions. These issues deal with the disposition and use of royalty income derived by nonprofit GOCO contractors from licensing laboratory inventions, and with the ownership of the inventions once a new contractor becomes the operator of the DOE facilities. In the policy memorandum, the Secretary set forth four guidelines to be considered when addressing these issues as part of the new patent policy.

- Title to patents can remain with either the facilities or the contractor.
- Costs of commercialization should be borne by the contractor. (DOE may accept patent and licensing costs on a case-by-case basis.)
- Royalties should accrue to the contractor to foster commercialization or sponsor further research at the facility.
- Adequate provisions must be included to protect against a potential contractor conflict of interest.

Objectives, Scope, and Methodology

The Chairman, Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, requested in a November 27, 1984, letter, and during an April 30, and a July 22, 1985, meeting with his office, that we examine various issues associated with changes in DOE's patent policies. These changes, resulted from (1) Public Law 98-620, which amended the Patent and Trademarks Amendments Act of 1980 (P.L. 96-517) and (2) a February 1985 DOE policy statement, which will allow contractors who operate DOE's GOCO facilities to retain title to many of the inventions developed at the GOCOS. The Chairman was interested in how the new patent policies compare with DOE's past policies and how the changes in policy will affect the commercialization of inventions developed at the GOCOS as well as the performance of DOE's mission-related work by GOCO contractors. The following are the areas

the Chairman asked us to address and the steps we took to address them:

1. Determine whether large amounts of commercially valuable technology at DOE's GOCOs have not been transferred to the private sector and how DOE's patent policies have affected the commercialization of these technologies.

We reviewed studies that evaluated DOE technology transfer efforts to see if GOCO-developed technology with commercial value has "remained on the shelf." We discussed the effectiveness of DOE's technology transfer efforts and the patent waiver process with DOE and GOCO contractor officials and reviewed statutes dealing with technology transfer. We also examined the time it took for DOE to process all waiver requests made by DOE's GOCOs for inventions between 1977 and 1985, and reviewed the waiver files of the three GOCO contractors who requested the largest number of waivers to determine reasons for processing delays. We did not, however, attempt to carry out our own assessment of the commercial value of remaining technology at DOE's GOCOs nor did we review the effectiveness of DOE technology transfer efforts apart from its patent policies.

2. Determine to what extent DOE's new patent policies will promote commercialization of GOCO inventions.

We examined legislation, the President's patent policy memorandum, draft regulations which Public Law 98-620 directed the Department of Commerce to prepare to implement the law's patent provisions, and the 1985 DOE patent policy statement. We discussed the proposed changes with DOE, Commerce, and GOCO contractor officials. In addition, we reviewed DOE waiver and licensing records and efforts by three GOCO contractors to license GOCO inventions to which they had obtained title.

3. Determine how DOE considers the effects of its patent policies on competition.

We reviewed legislative requirements pertaining to DOE's patent activities and examined how DOE has considered competition under its traditional patent policies. In addition, we discussed how the policy changes will affect DOE's efforts relating to competition with DOE and contractor officials, and reviewed previous studies that evaluated the effects of federal patent activities on competition. As part of this work, we

examined patent waiver files for the 55 approved GOCO waivers we identified from DOE statistics. As agreed with the Chairman, our review focused on how the changes in patent policy will affect DOE's activities relating to competition rather than whether the changes in patent policy will lead to anticompetitive effects.

4. Determine whether the changes in patent policy would produce undesirable effects on DOE's mission work at its GOCOS such as conflicts of interest or information exchange and classification problems.

We examined whether the changes in DOE patent policy resulting from Public Law 98-620 and DOE's 1985 patent policy statement are likely to create problems at DOE's GOCOS such as distracting GOCO contractors from their principal mission and diverting their attention to commercial activities. We discussed these potential problems with DOE officials at its headquarters and DOE's San Francisco, Albuquerque, and Oak Ridge operations offices; with contractor personnel at Los Alamos National Laboratory, Lawrence Berkeley Laboratory, Lawrence Livermore National Laboratory, and Oak Ridge National Laboratory; and with other officials involved in federal patent policy. We also reviewed comments prepared by other DOE operations offices and GOCO contractor officials on the potential effects of changes in patent policy.

5. Examine the major provisions of a proposed patent agreement between DOE and Martin Marietta Energy Systems, operator of DOE's Oak Ridge, Tennessee, and Paducah, Kentucky, GOCO facilities to determine how the agreement would affect Martin Marietta Energy Systems' ability to obtain patent rights to inventions developed at the facilities.

We reviewed the negotiations which took place in 1984 between the DOE Oak Ridge operations office and Martin Marietta Energy Systems regarding title to inventions developed at the facilities Energy Systems operates. We examined the major provisions contained in a December 10, 1984, "final draft" of an "Advance Patent Waiver" which DOE's Oak Ridge operations office was negotiating with Energy Systems. The information presented was developed from our review of documents provided by DOE and Energy Systems relating to the patent negotiations and discussions with DOE and Energy Systems' officials.

In responding to the legal questions raised by the Chairman, we reviewed provisions in law that pertain to the following:

- DOE's authority to grant nonexclusive and exclusive licenses royalty free,
- DOE's authority to accept royalties from its contractor at Oak Ridge National Laboratory in order to fund DOE's mission work,
- DOE's nonprofit GOCO contractors' use of royalties from inventions developed as part of DOE's mission work,
- DOE's authority to invoke march-in rights if a GOCO's licensing practices result in anticompetitive effects, and
- DOE's authority to disclose invention utilization reports to the public.

We discussed the factual information in this report with agency program officials and have included their comments where appropriate. However, as requested by the Chairman, we did not request official agency comments on a draft of this report. Except as noted above, our work was performed in accordance with generally accepted government auditing standards. We performed our review from April 1985 through June 1986.

The Effect of DOE's Historical Patent Policies on Commercialization of Technology

Requester's Question:

Are there large dollar amounts of commercially valuable technology at DOE's GOCOS which have not been transferred to the private sector and have DOE's patent policies inhibited the commercialization of these technologies?

DOE has been criticized by some of its GOCO contractors for not being more effective in transferring technology developed at its GOCOS to the private sector. In particular, the contractors have expressed concern that the patent waiver policies used by DOE at its GOCO laboratories have inhibited the commercialization of laboratory technologies. A primary criticism by GOCO contractors has been the length of time it takes DOE to process waiver requests. Our review showed that it takes DOE, on average, over a year to process waivers; however, we found no direct evidence showing that a greater number of GOCO inventions would have been commercialized if the waiver process were eliminated. Also, we found no analysis quantifying the commercial value of technology at DOE's GOCOS which has not been commercialized, nor any study showing that large amounts of technology with commercial value still remain on laboratory shelves.

Effects of the Waiver Process on Contractor Ownership of Inventions

As discussed in appendix I, under traditional DOE patent policies, GOCO contractors have had to submit waiver requests to DOE to obtain title to individual GOCO inventions. To determine how these patent policies have affected the transfer of technology from DOE's GOCOS to the private sector, we examined the extent to which GOCO contractors have used the patent waiver process and assessed the effect of delays in processing patent waiver requests on technology transfer.

DOE's Administration of Patent Waiver Requests

GOCO contractors have requested patent waivers for few laboratory inventions. Our review of DOE waiver statistics showed that 135 identified invention waiver petitions for contract inventions were filed by 14 GOCO contractors from October 1, 1977, when DOE was established, until December 24, 1985.¹ During the period October 1, 1977, through June 25, 1985 (the latest date for which statistics were readily available), DOE statistics show that 7,235 inventions were generated at DOE laboratories and that DOE filed patent applications on 1,831 during this period.

¹The statistics include contractor patent waiver requests for inventions under GOCO (management and operating) contracts on the Secretary of Energy's February 5, 1985, list of authorized contracts. The statistics do not include waiver requests by the contractors under other DOE non-GOCO contracts and GOCO subcontracts.

As of December 24, 1985, DOE had completed action on 55 (40 percent) of the 135 waiver requests filed by GOCO contractors for inventions developed at the GOCOs. In addition, 11 (8 percent) of the waiver cases have been closed for various reasons such as the contractor's withdrawing the petition or the operations office's denying a request to extend the time period in which contractors may petition. As of December 24, 1985, the remaining 69 waiver requests were pending.

All of the waiver requests DOE headquarters has acted on were approved except in one case where the contractor received a license to use the invention rather than title to it. On average, it took 14 months from the time a GOCO contractor requested a waiver until DOE headquarters approved it. However, processing times varied considerably. The processing of individual waiver requests took from under 1 month up to 50 months. Thirty of the waivers took less than 1 year to process, 12 took between 1 and 2 years, and 13 took 2 years or more.² Of the GOCO waivers which were pending, 48 had been pending for less than 1 year; 16 had been pending for between 1 and 2 years; and 5 had been pending for 2 years or more.³

University of California Waiver Requests

To obtain a more detailed understanding of DOE's handling of waiver requests, we reviewed files in DOE's headquarters relating to waiver requests submitted by the University of California for inventions developed at the GOCOs it operates. The University of California filed 57 waiver requests since 1978, by far the largest number of requests filed by any one GOCO contractor. The second largest requester, Martin Marietta Energy Systems—the operator of DOE's Oak Ridge National Laboratory—filed 31 waiver requests since April 1984.⁴ The third largest requester, as of September 1985, Stanford University, filed eight requests since July 1980.⁵

²These statistics were compiled from data in the waiver files because DOE's waiver statistics contained errors in a number of cases. Generally, DOE's statistics understated processing time by 1 to 2 months.

³Pending waiver statistics are based on unaudited DOE statistics.

⁴Energy Systems withdrew 3 waiver requests; 25 of the requests were pending at DOE as of December 24, 1985.

⁵In November 1985, Western Electric filed six waiver requests replacing Stanford University as the third largest requester. In total, Western Electric filed 10 waiver requests during 1985; all were pending as of December 1985.

On average, it took DOE 14 months to approve 32 of the 57 University of California waiver requests. In addition, the University generally was notified of DOE headquarters' action 1 to 2 months after DOE headquarters' approval. This increased the average waiver processing time to 15 or 16 months. Processing time ranged from less than 1 month to 49 months. As of December 24, 1985, 19 of the 57 University of California petitions were pending; 14 had been pending for less than 1 year; 1 had been pending for more than 1 year; and 4 had been pending for 2 years.⁶

Reasons for Processing
Delays

Based on our analysis of DOE headquarters' waiver files and discussions with DOE officials involved in processing waiver requests, delays in processing requests appear to have been most often due to the need to perform higher priority work rather than to the time needed to resolve problems relating to the requests. The DOE headquarters waiver files we reviewed generally did not contain information explaining why some cases were handled quickly while others were not.

DOE's Assistant General Counsel for Patents believed most waiver processing delays were due to postponing work on the waivers because of other priorities. The San Francisco and Oak Ridge operations offices' patent counsels said waiver delays were generally a result of the low priority that the identified invention waivers received compared with other patent work. According to the San Francisco patent counsel, waivers were given less attention because contract work had a higher priority. DOE's Albuquerque operations office patent counsel believed past delays also stemmed in part from the fact that waivers had to be reviewed by several attorneys in DOE headquarters before being signed by the DOE Deputy General Counsel for Legal Services.⁷

⁶The other six requests were handled as follows: DOE denied two waivers that the University of California successfully appealed, DOE closed one 1981 petition because the University requested patent rights 18 months after the allowed request period in the contract had expired, and the University withdrew three waiver requests.

⁷On April 9, 1984, DOE headquarters delegated the signature authority for patent waivers to the DOE Assistant General Counsel for Patents. Prior to this, the DOE Deputy General Counsel for Legal Services had signature authority. This change eliminated one layer of DOE headquarters' review.

Views of DOE and Contractor Officials on Invention Commercialization

We discussed the effects of delays in patent waiver requests with GOCO contractor employees to assess the effects of the delays. We also reviewed the responses of DOE's GOCO contractors obtained in a past GAO survey connected with our report Federal Agencies' Actions to Implement Section II of the Stevenson-Wydler Technology Innovation Act of 1980 (GAO/RCED-84-60, Aug. 24, 1984).

Commercialization of GOCO inventions through the patent process is not the only means of transferring technology developed at DOE's GOCOS to the private sector. DOE's GOCOS also carry out a wide variety of other activities which attempt to promote technology transfer. These activities include joint research programs with industry; education and technical training programs; preparation of publications, videotapes, and software on laboratory technology; and various person-to-person interactions, such as collaborative efforts, consulting, and employee loan activities. While the success of these activities may have a large influence on the overall effectiveness of DOE technology transfer efforts, as agreed with the Committee, our review focused exclusively on the effects of DOE patent activities.

DOE officials and GOCO contractor employees with whom we spoke had varying views on the amount of commercializable technology in DOE's GOCOS which has not been transferred to the private sector. However, according to DOE's Director of Laboratory Management, neither DOE nor any of its contractors have conducted studies to assess the commercial value of DOE laboratory technologies which have not been transferred to the private sector. GOCO contractors do assess whether specific inventions developed at the laboratories have commercial potential, but we found no study which quantified the commercial value of these inventions.

Officials at two GOCO laboratories operated by the same contractor had differing views on the amount of technology having commercial potential. A scientist at one of the GOCOS believed that technology at his laboratory had commercial potential. GOCO officials at the other laboratory believed, however, there was little technology sitting on the shelf which would have been commercialized even if contractors had not needed DOE's approval of requests to obtain title to GOCO inventions.

We specifically discussed the effect of waiver processing delays on invention commercialization with patent officials representing three contractors that had submitted the largest number of waiver requests

for GOCO inventions as of September 1985. All three GOCO contractors were critical of the waiver process.

The University of California Patent, Trademark and Copyright Office licenses University-owned inventions, including GOCO inventions waived to the University. The director of this office said licensing new technology is a high-risk business, making it necessary for contractors to obtain ownership of inventions quickly in order to be in a position to respond with a licensing agreement when a company expresses an interest in obtaining a license to a GOCO invention. The director believed that, if the contractor had title to the invention at the time of a potential licensee's first interest, the contractor's chances of successfully negotiating a license agreement would be very good. If the contractor does not have the rights, the director believed that, frequently, the potential licensee will pursue its needs through other sources. According to records provided to us by the University on its efforts to license GOCO inventions, in two cases where it had obtained title from DOE, the University lost potential licensees with whom it was negotiating because of waiver delays.

Officials from the other contractors—Stanford University and Martin Marietta Energy Systems—also criticized the waiver process. In 1984 the Stanford University Technology Licensing Director wrote to DOE to request expedited processing of a waiver request after being told by a DOE patent advisor that it would take 2 years to receive a DOE decision. In the letter, the director wrote that for some inventions, the likelihood of licensing declines in direct proportion to the period of time after discovery. Martin Marietta Energy Systems officials said the waiver process was too cumbersome and had too many levels of review within DOE.

In addition to the fact that DOE's waiver process may result in potential licensees' losing interest in pursuing licenses for inventions developed at DOE laboratories, some contractors also told us that the process may discourage contractors from requesting waivers. For example, the University of California's patent director said that delays in processing waiver requests prompted the University of California to stop filing waiver requests in 1981 for a year.

GAO Survey Results on Effectiveness of Technology Transfer

As part of an evaluation on how laboratories had implemented provisions contained in the Stevenson-Wydler Innovation Act of 1980, we sent a questionnaire to 236 laboratories owned or funded by 10 federal agencies. The questionnaire asked, among other things, about the laboratories' success in transferring technology. The general results of that review are discussed in our August 24, 1984, report.⁸

In response to the questionnaire, 25 of DOE's current GOCOS provided the following information relating to the transfer of laboratory technology with commercial potential.⁹ (See table II.1 for a list of current GOCOS responding to the questionnaire.)

Table II.1: List of GOCOS Responding to GAO Questionnaire

<p>Energy Technology Engineering Center Lawrence Berkeley Laboratory Lawrence Livermore National Laboratory Stanford Linear Accelerator Facility Laboratory for Energy Related Health Research Laboratory of Radiobiology and Environmental Health Laboratory of Biomedical and Environmental Sciences, University of California at Los Angeles Solar Energy Research Institute Idaho National Engineering Laboratory Argonne National Laboratory FERMI National Accelerator Laboratory Ames Laboratory Princeton Plasma Physics Laboratory Los Alamos National Laboratory Sandia National Laboratories Inhalation Toxicology Research Institute Brookhaven National Laboratory Knolls Atomic Power Laboratory Bettis Atomic Power Laboratory Savannah River Ecology Laboratory Savannah River Laboratory Oak Ridge Associated Universities Oak Ridge National Laboratory Hanford Engineering Development Laboratory Pacific Northwest Laboratory</p>

Twelve of the 25 DOE GOCOS responding said that either all or almost all of the products, processes, or services developed by their laboratory which had potential for successful application to private industry and/or state and local governments had been made available for their use, while 7 others said most had been made available. Six other respondents said either half, some, or none of the products, processes, or services

⁸Federal Agencies' Actions to Implement Section II of the Stevenson-Wydler Technology Innovation Act of 1980 (GAO/RCED-84-60, Aug. 24, 1984).

⁹Most responses were received in late 1982 or early 1983.

were made available. Responses from the GOCOs varied concerning the extent to which products, processes, or services developed at the laboratories had potential for successful application. Seven respondents said half or more of the products, processes, or services had such potential; 13 said some had potential; and 5 said little or none had potential.

For those products, processes, and services with potential for successful application to the private sector and/or state and local governments but which were not made available, respondents were asked how five reasons had affected their availability. Table II.2 shows how 22 of the respondents evaluated five major reasons why products, processes, or services were not made available.

Table II.2: DOE Laboratory Responses

Major reasons laboratory products, processes, or services were not made available ^a	Distribution of Contractor Opinions on the Number of Inventions Affected ^b				
	All/or almost all	Most	About half	Some	Few, if any
National security	3	0	0	4	15
Nature of product, process, or service (i.e., limited application)	5	4	2	8	3
Stage of development (may be transferable eventually, too early to tell)	2	3	2	8	7
Prohibitive costs incurred by laboratory for adaptive engineering	0	0	2	7	13
Patent/license restrictions	1	0	1	8	12

^aTwenty-two of the 25 respondents provided answers to these questions. Three of the 22 also identified other reasons why products, processes, and services were not available.

^bAs discussed above, these opinions relate only to inventions which have the potential for application but were not made available.

As shown in table II.2, the majority of respondents (12 of 22) said patent/license restrictions were a major reason why few, if any, products, processes, or services were not made available to private industry and/or state and local governments. Eight others said that patent/license restrictions affected some products, processes, or services.

Observations and Conclusions

While we found support for contractor criticism of DOE's patent waiver process, we found no direct evidence showing that absent the waiver process, a substantially greater number of GOCO inventions would have been commercialized. The time DOE has taken to process identified invention waivers has frequently been lengthy—over 1 year on average. However, we found no clear evidence that this has had a major impact

on the commercialization of inventions developed at DOE's GOCOS. The contractor who filed the largest number of waiver requests did provide evidence showing that waiver delays were contributory factors resulting in two potential licensees' losing interest in obtaining licenses to GOCO inventions for which the contractor eventually obtained title. We recognize that the waiver process may have also discouraged GOCO contractors from seeking title to inventions and firms from seeking licenses to waived inventions.

We found no analysis quantifying the commercial value of technology in DOE's GOCOS which has not been transferred to the private sector or which clearly shows that large amounts of commercially valuable technology remain on the shelf. Based on questionnaire responses obtained from DOE's GOCOS, it appears that some technology which could have commercial application in the private sector has not been transferred. However, various factors other than weaknesses in DOE's technology transfer efforts may have caused the technology to be unavailable, such as the stage of its development and the limited nature of its application.

Contractor Commercialization of Laboratory Inventions

Requester's Question:

To what extent will changes in patent policy proposed by the Secretary of Energy in February 1985 lead to increased commercialization of inventions developed at DOE's GOCOS?

On February 5, 1985, the Secretary of Energy issued a policy statement calling for DOE to revise the policies and procedures it had used to allow contractors to obtain title to inventions developed at DOE's GOCOS. A principal element of this policy statement involved increasing contractors' ability to retain title to inventions developed under contracts with DOE. The policy statement reflected changes enacted under Title V of Public Law 98-620. Title V revised a provision of the Patent and Trademark Amendments Act of 1980 (P.L. 96-517, 35 U.S.C. 202(a)), which allowed agencies to exclude inventions developed under funding agreements covering GOCOS from the law's general requirement that small business and nonprofit contractors be allowed to retain title to inventions resulting from federally funded research and development. The policy statement also expanded on the provisions of Public Law 98-620 by establishing four "class waivers" which would facilitate contractors' ability to obtain title to inventions. In addition, the policy statement made several other changes in DOE's patent policy, such as revising the way in which royalties from GOCO inventions would be used. (See app. VIII.) The new DOE patent policies are described more fully in appendix I.

As of September 15, 1986, DOE had not yet implemented the new patent policies. The DOE Assistant General Counsel for Patents said that DOE will issue its class waivers once the regulations promulgating Public Law 98-620 are final. He said DOE has taken this approach because terms of the regulations will affect terms in the waivers, and DOE wants to ensure that the waivers comply with the regulations. On July 14, 1986, the Department of Commerce, which has major responsibility under Public Law 98-620, issued interim final regulations. However, DOE has not yet acted to implement the new policies.¹

Because the new patent policies have not been implemented, we cannot assess how successful GOCO contractors will be at commercializing laboratory inventions. Even after the policies are implemented, it may be difficult to evaluate their effect on invention commercialization for several years because of the length of time it takes to commercialize an invention. However, our review showed that several elements of the

¹Between July 14 and September 12, 1986, The Department of Commerce received public comment on an "interim final" version of the regulations. As of October 15, 1986, Commerce had not completed its review of these comments.

new policy may promote commercialization of laboratory inventions. Some of these elements include the following:

- Inventions that may require exclusive rights to attract capital investment necessary for commercialization can be licensed more easily by contractors than by DOE.
- Contractors' use of royalty income to develop the commercial applications of GOCO inventions may promote commercialization.

Effect of the New Patent Policies on Technology Transfer

While it is not yet possible to fully assess how the new DOE policies will affect the commercialization of inventions at DOE's GOCOs, it is possible to assess the effects of these policies to some degree by examining their provisions aimed at promoting invention commercialization and how they differ from provisions in DOE's previous patent policies. These provisions include

- allowing GOCO contractors, in most cases, to obtain title to inventions more easily than under past DOE policies and
- creating new incentives and opportunities for invention commercialization as the result of revisions in procedures covering royalty use, licensing and patenting costs, and contract award fees.

Facilitating Contractors' Ability to Obtain Title to Inventions

The changes in patent policy make it easier for contractors to obtain title to many inventions by eliminating the need for DOE to approve requests for the government to waive title to specific GOCO inventions. This will reduce the time necessary for contractors to obtain title to inventions—a problem which contractors have cited as hindering their efforts to license GOCO inventions.² Eliminating the need for GOCO contractors to file waiver requests may encourage contractors to seek to obtain title to more GOCO inventions. In cases where contractors do obtain title to inventions, their efforts to commercialize the inventions also may be different from DOE's. For example, contractors may issue more exclusive and fewer nonexclusive licenses than DOE.

²As discussed in appendix II, we found that the time it took for DOE to approve waiver requests was often lengthy; however, we found few examples which specifically demonstrated that waiver-processing delays caused inventions not to be commercialized.

Contractor Ownership of
Inventions

The fact that GOCO contractors will no longer need to file identified invention waiver requests for most GOCO inventions may induce contractors to obtain title to more GOCO inventions than they did in the past. As discussed in appendix II, GOCO contractors have requested patent waivers for only a very small percentage of inventions conceived at DOE's GOCOS.

The waiver process may have been a factor in contractors' not asking for title to inventions developed at the GOCO facilities. However, as discussed in appendix II, other factors, such as the nature of the research being conducted and the commercial potential of inventions generated, are also important.

While eliminating the waiver process may lead some contractors to seek title to more GOCO inventions, contractor ownership of inventions may not increase substantially at all GOCOS. For example, the head of the University of California patent office at Lawrence Livermore National Laboratory told DOE that he did not expect the number of requests for title to Livermore inventions to change substantially under the new policy.

Contractors' Licensing Efforts

The extent to which contractors obtain title to more GOCO inventions could also affect the number of inventions commercialized because their activities aimed at commercializing inventions may differ from DOE's. Contractors are likely to make greater use of exclusive licensing and can issue exclusive licenses more quickly than DOE. Contractors and others have argued that the difficulty that prospective licensees of government inventions have had in obtaining exclusive licenses has reduced invention commercialization. They have argued that industry will not make the necessary investment until it is certain that its market position is ensured through ownership or licensing of patent rights covering the invention. Contractors will not be subject to the same restrictions as DOE in issuing such licenses. For example, DOE is required to seek public comment on exclusive licenses and will not issue exclusive licenses if it receives applications for nonexclusive licenses for the same inventions.

We cannot predict to what extent contractors will be more successful than DOE has been in commercializing inventions. As agreed with the requester, however, we obtained licensing information about waived inventions from three GOCO contractors to see how past contractor efforts compared with DOE's. Sufficient information exists on the licensing efforts of only one of these contractors, the University of California, to carry out any meaningful assessment. We also looked at

licensing efforts of Martin Marietta Energy Systems and Stanford University, GOCO contractors which had submitted the second and third largest number of waiver requests for GOCO inventions at the time of our review. However, as of December 1985, Energy Systems and Stanford had received DOE approval for only three and six waivers, respectively.³

Table III.1 illustrates the licensing activities of DOE and the University of California for inventions conceived at three GOCO facilities the University operates: Lawrence Berkeley Laboratory and the Lawrence Livermore and Los Alamos National Laboratories.

Table III.1: Licenses Issued for Inventions at Three University of California Laboratories, January 1983 to December 1985

	DOE	University of California
Inventions licensed	9	5
Licenses issued:		
Exclusive licenses	3	4 ^b
Nonexclusive licenses	12	0
Patent portfolio	462 ^a	40 ^c
Percentage of portfolio licensed (inventions licensed 1983-85 divided by the patent portfolio)	1.9	12.5

^aThis figure is an estimate of the number of patents which will be obtained from inventions generated at the above laboratories from October 1977 through December 1985 minus inventions waived to the University of California. This estimate is based on DOE statistics of patent applications filed and DOE's estimate that about 71 percent of patent applications result in approved patents

^bOne license covers two inventions

^cThis figure is the number of GOCO inventions to which the University has obtained title through the waiver process from October 1977 through December 1985

While these statistics indicate that the University of California has licensed a larger percentage of GOCO inventions in its patent portfolio than DOE, they do not conclusively demonstrate that the University has been more successful than DOE in licensing GOCO inventions because of the basic differences in the patent portfolios. For example, the following factors should be considered in evaluating these statistics:

- The University of California only selects inventions with short-term commercial potential, whereas DOE patents for reasons other than commercializing inventions. For example, DOE may patent inventions for "defensive" reasons—i.e., to keep the government from having to pay royalties on inventions which it developed, but which were patented by

³Energy Systems issued an exclusive license to a company for the three inventions included in these waivers; Stanford University had an option with a firm to license one invention for which it has received title. In November 1985, Western Electric replaced Stanford as the third largest requester, filing 10 waiver requests during 1985; all were pending as of December 1985.

private firms because the government did not patent the invention or take other defensive actions.

- DOE may have been able to license some of the inventions to which the University obtained title.

Also, the statistics should not be used to predict the University's licensing activities in the future under the new policies since the University and other contractors will be able to obtain title to inventions more easily. Further, as discussed below, other changes may enhance future contractor licensing efforts.

Other Changes in DOE's Patent Policy Affecting Commercialization Incentives

In addition to making it easier for contractors to obtain title to inventions, the new DOE patent policies include other components intended to increase the commercialization of DOE inventions.

Use of Royalties

The Secretary's February 5, 1985, patent policy statement discusses the disposition of royalties contractors receive from DOE inventions waived to and licensed by DOE's contractors. The Secretary's statement includes the following guideline: "Royalties should accrue to the contractor to foster commercialization or sponsor further research at the facility." The provisions of Public Law 98-620 also allow contractors to use royalties received from GOCO inventions which have been successfully commercialized to increase the commercial potential of other inventions developed at the GOCOS. The public law also allows royalties to be used for other purposes.

At the present time, it is not possible to forecast the amount of royalties which GOCO contractors will receive from inventions which are successfully commercialized or how these royalties will be used. If, however, GOCO contractors use royalties to increase the commercial value of GOCO inventions, it may increase their licensing potential.

Fee Considerations and Allowable Contract Costs

According to the Secretary's patent policy statement, contractual incentives to promote commercialization of inventions, such as fee considerations and cost allowances, may be used. An example of a contractual fee incentive is contained in the contract between DOE and Energy Systems for the DOE Oak Ridge facilities, which went into effect in April 1984.

The annual award fee received under the contract is based on performance evaluations using preestablished criteria, one of which is the success of the Energy Systems' technology transfer program. This type of provision may encourage contractors to seek to commercialize inventions developed at the GOCO facilities they operate.

While the Secretary's policy statement states that costs of commercialization (beyond DOE's program needs) should be borne by the contractor, it also states that DOE may agree to cover patent and licensing costs on a case-by-case basis. If DOE agrees to accept patent and licensing costs for inventions waived to contractors, the contractors' investment, and thus the financial risk relating to invention commercialization attempts, will be reduced. A proposed agreement between DOE and Energy Systems provides that certain patent and licensing costs for waived inventions are allowable contract costs. However, these patent and direct-licensing costs could not exceed \$200,000 per year for 4 years.

Observations and Conclusions

Several years will pass before it is possible to accurately assess the extent to which the new policies have promoted the commercialization of inventions developed at DOE's GOCOs. This is due to the time lag involved in many commercialization efforts.

The success of the new policies in promoting invention commercialization will hinge largely on actions of GOCO contractors. Based on historical records, it is difficult to tell whether the contractors' efforts to commercialize inventions will be more effective than DOE's. Most GOCO contractors have requested title to few GOCO inventions under the DOE waiver process. The University of California is the only contractor whose GOCO invention-licensing actions can be reasonably compared with DOE's. Although the University has licensed a higher percentage of patented inventions from the facilities it operates than DOE has, this result is not surprising because its focus in patenting inventions is on commercializing them, whereas DOE may patent inventions for other reasons. It is not known how many University-owned inventions DOE would have licensed had it retained title to them.

Several elements of the new policy may, however, tend to promote invention commercialization.

- The waiver process will be eliminated for many inventions, and contractors will receive title to inventions more quickly.

-
- Inventions which may require exclusive rights to attract the capital investment necessary for commercialization can be licensed more easily and rapidly by contractors than by DOE.
 - Contractor use of royalty income to develop the commercial applications of GOCO inventions may promote commercialization.
 - DOE's use of contract incentives and cost allowances to promote technology transfer may increase invention commercialization but may also increase contract costs.

DOE's Consideration of the Effect of Its Patent Activities on Competition

Requester's Question:

How has DOE considered the effect of its patent activities on competition and market concentration and how will this change under DOE's new patent policies?

The new patent policies being developed by DOE will change the methods which DOE has used to assess the impact of its patent activities on competition and market concentration. As part of the identified invention waiver process which DOE has traditionally used to grant contractors title to GOCO inventions, DOE has been required to consider the effect of the waiver on competition and market concentration. Under its proposed patent policies, however, contractors will not have to submit waiver requests to DOE to obtain title to most GOCO inventions.

At the present time, we cannot evaluate to what extent DOE's new patent policies will promote commercial development of inventions conceived at DOE's laboratories and how this will affect concerns regarding competition and market concentration. DOE is no longer legislatively required to consider competition when nonprofit GOCO contractors obtain title to inventions. DOE is still required under the Federal Nonnuclear Energy Research and Development Act of 1974 to evaluate the effects of giving for-profit contractors title to inventions under its class waivers. However, DOE has not decided how it will consider competition and market concentration under its new patent policies.

Background

A principal consideration in discussions regarding federal patent policy has been how policies are likely to affect competition and market concentration. For example, historically, opponents of policies such as the new DOE patent policies, which allow contractors (rather than the government) to retain title to inventions developed with government funds, have expressed concern that such policies could result in the formation of product monopolies, increases in product costs to consumers, and lessening of market competition. In this regard, there has also been concern in the past that allowing large companies to retain title to inventions developed with government funds could give them a competitive advantage over smaller companies and that granting exclusive licenses to patent developers could reduce the number of potential producers and developers of inventions. On the other hand, advocates of policies allowing contractors to retain title to federally funded inventions have argued that such policies may be procompetitive to the extent that they promote the commercialization of new inventions. They also have argued that the additional commercialization of technologies resulting

from contractor ownership of inventions will enhance the competitive status of the United States in the world marketplace.

We found few studies which have attempted to evaluate the effect of alternative federal patent policies on competition and market concentration. A 1979 Stanford University study, Government Patent Policy: An Analysis of the Effects of Three Alternative Patent Policies on Technology Transfer and the Commercialization of Government Inventions, which analyzed this issue, concluded that there had been no significant examples of monopolization resulting from patents obtained on government-sponsored inventions, primarily because "... there are few patented inventions of sufficient quality to allow the capture of a market."

The conclusions in the Stanford study appear to be based in large part on the Government Patent Policy Study conducted in 1968 by Harbridge House, Incorporated. That study found, among other things, that for inventions it reviewed, patents appeared to have a small impact on commercial markets and that there were few instances reported where owners of government-sponsored inventions refused to license their patents (although the study did find that five companies refused to license 15 inventions). Based on statistics and case data analyzed, the study concluded that government patent policy had "... a very limited effect on business competition." Because of the age of these studies and the fact that they focused on patent policy governmentwide, it is unclear to what extent their results are relevant in judging the effects of the changes in DOE patent policy on competition and market concentration.

Effect of Changes in DOE Patent Policy on Its Consideration of Competition

The changes in DOE patent policies resulting from the passage of Public Law 98-620 and the issuance of the Secretary of Energy's February 1985 patent policy memorandum will affect the procedures DOE uses to consider the effects of its patent policies on competition and market concentration. The procedures DOE uses to consider these effects under its traditional patent policies and how they will be changed are discussed below.

DOE Actions to Consider Competition Under Its Traditional Patent Policies

To carry out its responsibilities relating to competition and market concentration, DOE has considered competitive effects when determining whether to waive title to inventions to DOE contractors. DOE has also considered competitive effects when issuing exclusive licenses for DOE-owned inventions. DOE has, however, done little to monitor the competitive effects of its waiver and licensing actions after a decision has been

made to waive or exclusively license the invention. DOE has never exercised march-in rights for anticompetitive reasons, according to DOE's Assistant General Counsel for Patents.¹

Review of Waivers for Competitive Effects

As part of its administration of the identified invention waiver process, DOE has established procedures aimed at assessing the effect of patent waivers on competition and market concentration. DOE has required contractors who submit identified invention waivers to address the likely effect of the waiver on competition and market concentration. The patent counsel in DOE's operations offices are required to analyze the waiver requests and to prepare statements of considerations setting forth the rationale for accepting or rejecting the requests. The statement of considerations addresses "significant issues and those that are decisive" and explains the basis for recommending that a waiver be approved or denied. The files containing the waiver request, the statement of considerations, and other material relating to the request are submitted to DOE's headquarters for approval.

We found some differences in the way DOE considered the competitive effects of the waivers for for-profit and nonprofit GOCO contractors. In four DOE statements of considerations which granted title to inventions to for-profit contractors, we found that DOE discussed competition in terms of contractors' market share in the fields to which the inventions related, DOE's plans to license other contractors, or competing products available in the marketplace.² Twenty-two of the statements of considerations for the 50 approved waivers to nonprofit contractors specifically discuss competition. In 13 of these cases, competition is discussed in terms of competing technologies available or the limited use of the technologies. In the other nine cases, the competition issue is addressed in terms of the contractor's nonmanufacturing or nonprofit status. DOE's Assistant General Counsel for Patents said that one reason the nonprofit contractor waiver files contained little information on competition is that in most cases, the identity of licensees for inventions is not known at the time a waiver request is submitted. Thus, the effect of the waiver on competition cannot be effectively assessed at that time.

¹Using march-in rights involves eliminating one party's exclusive rights to a particular invention by granting licenses to other parties.

²In the fifth waiver granted to a for-profit company, DOE granted an irrevocable, nonexclusive license on the invention rather than waiving title to it.

None of the waiver requests we reviewed had been denied because of anticompetitive concerns, and the Assistant General Counsel for Patents said he did not know of any such denials.

Issuance of Exclusive Licenses

DOE has also considered competitive issues before granting exclusive licenses to DOE-owned inventions. This includes referring all exclusive license requests which DOE plans to approve to the Division of Competition for its concurrence. In reviewing DOE's files relating to exclusive license requests, we found that DOE did not request the applicants to address the competitive effects of their receiving these exclusive licenses.

According to DOE's patent-licensing regulations, an exclusive license can be issued if an exclusive license is a necessary incentive for commercialization. DOE denies exclusive license requests if other qualified applicants are interested in nonexclusive licenses.

Use of March-In Rights

DOE has never exercised march-in rights against GOCO contractors who have received title to inventions or against licensees because of anticompetitive problems or for other reasons. Officials in DOE's Office of the Assistant General Counsel for Patents said that march-in generally would be invoked based on complaints from other firms regarding use of a DOE patent. They said, however, that DOE has not received any complaints warranting march-in. Although DOE does require firms that have received waivers or licenses from DOE to submit reports on how inventions have been used, the reports we reviewed did not provide information on how use of the invention had affected competition and market concentration.

DOE's Consideration of Competition Under Its New Patent Policies

While the new DOE patent policies are not completely formulated and implemented, based on our review of information available and discussions with DOE patent staff, it appears that they will affect how DOE considers competition in several respects. The primary effect of the new policy will be that GOCO contractors will no longer be required to file waiver requests to obtain title to most GOCO inventions. Thus, the contractors will no longer have to file information previously submitted as part of waiver requests on how their obtaining title to an invention will affect competition and market concentration.

The changes in patent policy may also have indirect effects on DOE's consideration of competition. For example, the changes in patent policy do not substantially alter the way DOE is to consider competition when it issues exclusive licenses on inventions for which the government retains title. However, to the extent that the new DOE patent policies encourage GOCO contractors to obtain title to GOCO inventions, rather than leaving title to such inventions with the government, they will be responsible for licensing the inventions rather than DOE. These contractors are not bound, however, by the same requirements for issuing exclusive licenses as is DOE.

DOE's Assistant General Counsel for Patents and the Deputy for Procurement Policy told us that it has not been decided how DOE will go about evaluating the effects of patent activities on competition under its new policies covering for-profit contractors. These officials said they have discussed the possibility of determining the competitive impact of for-profit GOCO contractors' retaining title to inventions through periodic examinations of contractors' patent activities. The Assistant General Counsel said they have also had general discussions with the Division of Competition regarding requirements for contractor reports on invention use, but these discussions have not specifically focused on concerns relating to competition. Further, in a July 1985 memorandum to the DOE patent counsel, the Assistant General Counsel raised the possibility of including a march-in provision as part of class waivers to for-profit GOCO contractors. This would allow DOE to require the contractor or an exclusive licensee to grant licenses to others if DOE determined such action was necessary because an exclusive license had tended to substantially lessen competition or resulted in undue market concentration. The Assistant General Counsel told us, however, no decision had been made regarding how DOE will evaluate competitive issues under its new patent policy.

The Assistant General Counsel for Patents said DOE does not plan to evaluate the effect of patent activities on competition under the new policies for nonprofit GOCO contractors because DOE no longer has the authority to do so.

Observations and Conclusions

DOE has carried out the Nonnuclear Act's requirements which call for it to consider the competitive effects of its patent activities primarily by evaluating competitive issues when it considers requests for patent waivers or exclusive licenses. In GOCO waiver cases, competitive concerns have been raised primarily where waivers have been requested by

for-profit contractors. DOE has never, however, either denied a GOCO waiver request or sought to enforce march-in rights because of anticompetitive problems.

Previous studies of the effect of government patent activities have also found few examples of anticompetitive results. However, the studies have attributed this, in part, to the fact that few government inventions had large commercial potential. As noted in appendixes II and III, a primary purpose of the new DOE policies is to promote the commercial use of inventions developed at DOE's GOCOS.

At the present time, we cannot evaluate to what extent the changes in patent policies will promote commercial development of inventions conceived at DOE's laboratories and how this will affect concerns regarding competition and market concentration. These effects will depend on the nature of inventions developed, the extent to which contractors obtain title to them, and to whom and on what basis they are licensed.

DOE is no longer legislatively required to consider competition when non-profit GOCO contractors obtain title to GOCO inventions. However, in cases where DOE allows for-profit contractors to retain title to inventions under the DOE class waivers, DOE is still required under the Nonnuclear Act to evaluate the effects of giving such contractors title to inventions. DOE patent officials said they are still deciding how they will consider issues relating to competition under their new patent policies.

DOE's Concerns Regarding the Effect of Patent Policy Changes on Its GOCOs

Requester's Question:

Will changes in patent policies produce undesirable effects at DOE's GOCOs such as conflicts of interest or information disclosure and classification problems?

In 1984 DOE drafted a response to a letter from Representative Doug Walgren outlining its views on legislation that would extend the patent rights provisions of the Patent and Trademark Amendments Act of 1980, Public Law 96-517, to all government contractors. DOE's letter identified specific concerns regarding the effect the legislation would have on its ability to carry out mission-related work at its GOCOs. The Committee's request asked us to examine the concerns expressed in the draft letter and determine whether the problems DOE identified are likely to arise in light of the changes in government patent policy mandated by Public Law 98-620 and proposed by DOE in February 1985. Since DOE has not implemented any changes to its patent policies, the potential effects of these policies are uncertain. However, the policies' effects are likely to depend on the financial rewards realized by the GOCO contractors from commercializing GOCO inventions. The policies' effects are also likely to depend on the effectiveness of controls DOE plans to institute in order to prevent financial incentives from adversely affecting DOE mission work.

Background

In response to Representative Walgren's May 21, 1984, letter to DOE requesting its views on House bill 5003 and a related Senate bill 2171, DOE described how it believed provisions in each bill would affect its GOCOs. The bills' proposed amendments to Public Law 96-517 would extend the patent provisions of the act to both DOE's for-profit and non-profit GOCOs. Under the bills, GOCO contractors would be allowed to retain title to inventions resulting from federally funded research without having to file petitions requesting that DOE waive the government's title to individual GOCO inventions. The bills also revised various other provisions contained in Public Law 96-517.

While DOE's draft letter to Representative Walgren indicated that DOE agreed with the philosophy of the legislation, the draft letter outlined various problems DOE believed could arise if GOCOs could retain title to inventions as proposed in the bills. In particular, the letter expressed concern that allowing GOCO contractors the option to obtain title to inventions at DOE's GOCOs could

- create conflicts of interest by distracting GOCO contractors from their principal mission and diverting their attention to commercial activities, such as commercial spin-offs of weapons-related inventions;
- inhibit exchange of information between GOCO contractors where patent rights of the contractors could be affected by such exchange; and
- create pressure for GOCO contractors to improperly classify technologies where they have an interest in obtaining patent rights to inventions.¹

The DOE draft letter stated that DOE believed the best way to resolve the problems it outlined in the letter was to allow DOE the flexibility to negotiate appropriate GOCO contract provisions. Thus, DOE urged that a provision contained in Public Law 96-517, which exempted GOCOs from the law's patent rights provisions, be incorporated in House bill 5003.

Although House bill 5003 was not enacted, some of its provisions were incorporated into Public Law 98-620. In particular, both House bill 5003 and Public Law 98-620 eliminated an exemption contained in the Patent and Trademark Amendments Act which allowed DOE to exempt GOCO inventions from the requirement that nonprofit contractors be allowed to retain title to inventions they develop under government contracts. While the provisions of Public Law 96-517, as amended, continue to apply to only nonprofit (and small business) contractors, rather than to both nonprofit and for-profit contractors as House bill 5003 originally proposed, the Secretary of Energy's February 1985 patent policy memorandum will establish class waivers allowing some for-profit GOCO contractors to obtain title to many GOCO inventions.

GOCO contractors will, however, still be required to file identified invention waiver requests to obtain title to some GOCO inventions. For example, DOE does not plan to allow contractors who operate GOCO facilities with primary defense-related missions to retain title to defense-related inventions unless they obtain DOE's approval of waiver requests.

¹In addition to these concerns, DOE's draft letter identified a potential problem concerning third-party sponsorship of research performed at DOE's GOCOs. DOE's Assistant General Counsel for Patents said DOE's concerns in this area have been adequately addressed in the Department of Commerce draft regulations implementing Public Law 98-620.

Effect of the New Patent Policies on GOCO Operations

Because the new DOE patent policies will allow the majority of GOCO contractors to elect to retain title to many GOCO inventions, DOE officials have expressed concern that some of the same problems cited in DOE's letter to Representative Walgren may arise under the new policies. To a large extent, these concerns are based on their view that GOCO contractors may take actions to increase the value of GOCO inventions to which they are able to retain title. The contractors could profit from such actions if they are able to receive royalties or other financial compensation from firms to which they license the inventions or if they or one of their affiliates commercialize the invention themselves. Further, if GOCO contractors allow employees who develop inventions to share in the royalties received from firms to which they are licensed, the employees may also have incentives to develop inventions that have commercial applications rather than carry out mission-related work.

Conflicts of Interest

In its draft letter to Representative Walgren, DOE expressed concern that extending the new patent policies to GOCO contractors could result in conflicts of interest by distracting contractors from performing their principal missions and diverting their attention to commercial activities. Specifically, the draft letter noted there is potential for researchers in DOE weapons facilities to focus on commercial spin-offs of their work rather than on weapons development. The draft letter also noted that conflicts of interest may arise where contractor personnel involved in recommending future work at the GOCOs propose research in areas where they have patent-related interest and could thus realize financial gain. The Secretary of Energy's February 5, 1985, patent policy statement also recognized that conflicts of interest could result from the new patent policies.

DOE patent officials we spoke with believed conflict-of-interest situations could arise under a GOCO contract when GOCO contractors or their employees have an incentive to perform work in or steer future work into areas with commercial potential to the detriment of mission-related work. At the contractor level, the incentives may be based on the contractor's desire to enhance the commercial potential of inventions to which the contractor has elected or will elect to retain title. The contractor could then license the invention to an affiliate or to other firms in order to obtain royalties. At the employee level, the incentive could be based on employees' desire to earn royalties on inventions they develop if they are allowed to share in royalties received by contractors. DOE officials have noted that DOE relies on its GOCO contractors to plan,

direct, and implement DOE's programs and to manage work at the GOCO facilities on a day-to-day basis with limited DOE oversight.

We discussed the likelihood of potential conflicts of interest arising at DOE's laboratories with DOE's headquarters and operations office officials who are familiar with DOE's patent policies. These officials' views varied somewhat as to the potential for conflicts of interest occurring. The Deputy Manager of the Oak Ridge operations office said liberalizing patent policies to expedite invention commercialization increases the potential for conflicts of interest. He said, for example, a contractor with title to an invention could advise DOE on the technology and future work that would enhance the invention's commercial potential or contractor employees could direct work to their own benefit. On the other hand, the Director of Energy Research at the San Francisco operations office said he does not think the royalties generated from GOCO inventions would be large enough to distract GOCO management from its mission-related responsibilities. He also did not think GOCO employees would be affected by the potential to earn royalties because if they were motivated to earn more money, they could get higher paying jobs in private industry. He also believed contractors would be sensitive to criticism from their peers if they steered work into nonmission-related areas. However, he agreed it would be difficult for his office to detect conflict-of-interest problems if they arose because of limited staffing in the operations office.

GOCO contractors we spoke with or whose views on patent policy changes were solicited by DOE cited various reasons why they did not believe allowing GOCO contractors to retain title to inventions would create conflicts of interest.

- Elimination of DOE's waiver requirements would not substantially change the potential for conflicts of interest because contractors and employees have always been able to request title to inventions.
- Contractor conflict-of-interest controls would be sufficient to prevent conflicts from occurring.
- Legislative restrictions limiting the amount of royalties nonprofit GOCO contractors may receive and requiring that royalties be used for mission-related work are sufficient to reduce the incentives for contractors to engage in conflicts of interest.

One contractor acknowledged that mission work could be directed toward a contractor's commercial interests if the contractor was "incompetent or unscrupulous."

Restricted Information Flow

A second issue raised in DOE's draft letter to Representative Walgren involves concerns about potential interruptions in the exchange of information between GOCO contractors who operate different facilities. DOE was concerned that a GOCO contractor interested in commercializing inventions may be unwilling to share information about potential inventions with other contractors in order to protect its patent rights. For example, in the case of a weapons-related invention having commercial applications, the draft letter said a GOCO contractor may delay communicating information relating to the invention to other DOE contractors until all commercial applications have been investigated and covered by patent applications. By withholding information about such an invention while awaiting a patent, GOCO contractors would reduce the likelihood that another contractor would claim that it developed or helped develop the invention and claim an interest in the patent rights relating to it.

In an August 1984 letter, DOE's headquarters officials asked its operations offices for their views on potential interruptions to the exchange of information between GOCO contractors that could occur under the patent legislation discussed in the Walgren letter. The San Francisco operations office said one problem would be a reluctance on the part of the GOCO employees to "give away" their ideas and suggestions before they have protected them. The operations office further said one contractor's aggressive patent posture may well inhibit the cooperation and collaboration by other contractors that do not have the same level of consciousness for patents and profits.

This concern was also expressed by the Nevada operations office. The Nevada operations office said that if GOCO contractors assume an aggressive patent posture in order to increase their opportunities to license laboratory inventions, the flow of information both within the contractor community and the public at large will almost certainly be restricted. According to the operations office, evidence of this can be seen at conferences and forums where both GOCO contractors (where the government owns the patent rights) and "commercial" contractors (where they own the patent rights) are brought together to share ideas and results and to explore solutions to particular problems. The office said the openness of the GOCO employees at these forums is sharply contrasted with the qualified and guarded sharing by the "commercial" contractor employees.

GOCO contractors we spoke with did not believe that the change in patent policy would affect their sharing of information. For example, the Los

Alamos National Laboratory's patent counsel said that there have not been any examples of contractor employees' withholding information from other contractor employees, and he did not see problems arising in the future.

Improper Classification of Information

A third issue raised in the draft letter to Representative Walgren concerns improper classification of information. In its draft letter, DOE indicated that allowing GOCO contractors the option to obtain title to all inventions made at GOCO research and production facilities causes concern about creating pressure to declassify technologies where contractors would like to obtain title to inventions.

DOE's concern stems from the fact that because contractors are involved in classifying inventions at its GOCO facilities, they have the opportunity to misclassify inventions. DOE prepares and issues program classification guides that provide a basis for the development of local classification guides used by a specific DOE facility.

In a November 12, 1985, letter to the Domestic Policy Council Working Group on Patent Policy, DOE's General Counsel stated that because classification guidelines may not keep up with the development of new technology, subjective judgment may be involved in classifying inventions. The letter said that DOE's personnel had observed cases where inventions which were national-security sensitive were not classified at the time they were reviewed by DOE's patent counsel because classification guidelines lagged the rapid development of the technology involved. The letter added that because classification authority is intrusted to contractors, "who are the direct beneficiaries of the financial rewards of patent ownership," misclassification problems could arise if contractors are allowed to automatically retain title to GOCO inventions. The letter also noted that, in some cases, contractor employees may be responsible for classifying their own inventions.

The potential for misclassification was also highlighted by an Albuquerque operations office official having oversight over two GOCO weapons laboratories' invention classification activities. The official disclosed that because of the fundamental role which contractors play in the classification process (i.e., proposing and administering policy), they have substantial ability to influence classification policy, particularly the policy that will be applied to new inventions. According to this official, it is unlikely that contractors would circumvent classification guidance and try to avoid classifying an invention in view of the penalties

which could result. Rather, he said, the area in which problems might occur is in determining policies to be applied to new inventions that fall outside of existing policies. He said it is often difficult to determine if some new inventions should be classified, since the inventions may have uses in weapons-related fields as well as in commercial fields. The official said there has always been some incentive on the part of inventors at DOE's GOCOs not to classify inventions because they want to publish the results of their work. He said he believes the new patent policies will increase incentives for both scientists and contractors not to have inventions classified. However, the official stated that he knew of no cases of malicious misclassification in the past.

Because DOE's officials believe the waiver process represented a check over the proper classification of laboratory inventions, we discussed with them the means they had to prevent the disclosure of national security information. DOE's officials said DOE reviews invention disclosures from its GOCOs as well as patent applications filed at the U.S. Patent and Trademark Office to see if the inventions are properly classified. Although the Patent and Trademark Office also screens patent applications for security, the officials said it would be difficult for the Patent Office to determine whether a DOE invention is properly classified. In addition, the officials said it is possible that contractors could discuss information on inventions that were not properly classified with potential licensees before DOE reviewed the patent applications.

DOE's officials said that misclassification of information would probably not occur at its facilities primarily dedicated to weapons work because contractors will still have to file waiver requests to obtain title to inventions at these facilities. However, DOE's Assistant General Counsel for Patents said he was still concerned about weapons work carried out at other GOCO facilities where contractors could retain title to inventions. DOE raised this concern to the Domestic Policy Council Working Group on Patent Policy in its November 1985 letter, which discussed the impact that Public Law 98-620's implementing regulations would have on national security.

The contractors we talked to disagreed with DOE's view, saying they believe current safeguards against the disclosure of classified information will prevent misclassification of inventions. Their views were reflected in a September 1984 letter from the Lawrence Livermore

National Laboratory to DOE's headquarters stating that existing classification procedures, based on classification guidance from DOE's headquarters backed by criminal sanctions, would suffice to safeguard the national interest in the course of commercialization activities.

Controls to Prevent Problems Resulting From the New Policies

DOE has recognized that because of the potential problems that may result from the changes in its patent policies, it may need to revise the controls it places on GOCO contractors. In a July 31, 1985, memorandum to DOE's operations offices, the Assistant General Counsel for Patents proposed draft guidelines, on the basis of the Secretary of Energy's February 1985 Patent Policy memo. These guidelines describe how the operations offices may implement proposed changes to DOE's patent policy affecting DOE's small business, nonprofit, and for-profit GOCO contractors. The memorandum covered, among other things, controls relating to the use of royalty income and conflicts of interest.

The Assistant General Counsel's memorandum states that a major question pertaining to GOCO contractors' retaining title to inventions concerns the use of royalty income resulting from the licensing of inventions. The memorandum also stated that to the extent that law and regulation permit, DOE preferred that royalty income accruing to the GOCO contractor be used at the facility. The memorandum elaborates on the guidelines DOE plans to institute for its GOCO contractors regarding using royalties at the facility. If royalty income is used outside the facility, the memorandum states that increased concerns for potential conflicts of interest should be reflected in implementing agreements with contractors.

In addition to the controls prescribing how GOCO contractors may use royalties generated through licensing of inventions, DOE's proposed draft guidelines set forth policy that contractors would follow when sharing royalties with their employees. The policy states that up to 10 percent of any royalty received on an individual patent may be given to the inventor annually for as long as the inventor is an employee of a DOE GOCO contractor, but in no event should annual royalty payments to an inventor exceed 10 percent of the individual's annual base salary.

Regarding conflicts of interest, in his February 5, 1985, patent policy statement, the Secretary of Energy stated that in revising GOCO contracts to comply with the new patent policies, contract terms and conditions would be negotiated so as "to minimize potential conflicts of interest." The conflict-of-interest controls, proposed in the Assistant General

Counsel's memorandum, would require each GOCO facility contract to set forth provisions to

- monitor employee activities to minimize conflicts of interest arising from commercialization activities relating to inventions,
- ensure that work performed at the facility is in the performance of DOE's missions and programs, and
- report to DOE's appropriate contracting officer when the subject matter of a proposal to be evaluated by the contractor is covered by a patent on an invention in which the contractor or its parent holds any beneficial interest.

The Assistant General Counsel for Patents said that DOE will incorporate conflict-of-interest controls in the GOCO contracts as recommended by the Secretary when the new patent policies are incorporated into the GOCO contracts. He said the changes will be handled as contracts come up for renegotiation. (However, DOE is waiting for the issuance of the Department of Commerce regulations promulgating Public Law 98-620 before the contracts are revised.)

While the Assistant General Counsel for Patent's July 1985 memorandum did not discuss problems relating to information disclosure and misclassification of inventions, these concerns have been brought to the attention of the Office of Management and Budget and the Domestic Policy Council.

Observations and Conclusions

DOE had not implemented any changes to its patent policies at the time of our review. Thus, the potential effects of these policies are uncertain. It appears, however, that the effects of these policies on its GOCO operations will depend on two sets of variables: (1) how great a financial reward the GOCO contractors may realize from commercializing GOCO inventions and (2) how effective DOE's controls will be in preventing the financial incentives created by the new patent policies from having an adverse effect upon GOCO operations.

The financial rewards a GOCO contractor may realize will depend in part on the amount of royalties the contractor realizes from the licensing of laboratory inventions, and in part on the controls over how royalties may be used. They will also depend on the circumstances under which GOCO contractors are allowed to license inventions to affiliated firms. At the employee level, incentives will depend on the extent to which GOCO

Appendix V
DOE's Concerns Regarding the Effect of
Patent Policy Changes on Its GOCOs

employees are allowed to share in royalties received by GOCO contractors.

Changes in DOE's patent policies may create incentives for GOCO contractors and employees to profit from commercializing GOCO inventions. DOE's officials have said they will need to ensure that these incentives do not adversely affect mission-related work at the GOCOs. The Secretary of Energy's 1985 patent policy statement recognizes the need to develop controls to prevent the changes in patent policy from having adverse effects on GOCO operations.

DOE's Practices for Charging Royalties for Inventions It Licenses

Requester's Questions:

Does the practice of granting royalty-free nonexclusive licenses to inventions developed with federal funds constitute a violation of law?

Is DOE prohibited by law from deferring royalty payments on exclusive licenses it grants to domestic concerns until the prospective licensee has recouped some of its development costs associated with commercialization of the invention?

In a June 25, 1985, letter to the Chairman, Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, DOE stated that it has traditionally granted nonexclusive licenses royalty-free. While it does charge royalties for domestic exclusive licenses, DOE said royalties for these licenses are generally deferred until the licensees can recoup some of their development costs. The Committee has asked us to render legal opinions on these licensing practices.

In our opinion, Public Law 96-517 and its implementing regulations authorize DOE to issue royalty-free, nonexclusive licenses when it determines that course of action to be in the public interest and consistent with criteria it has established for charging royalties. In addition, DOE's regulations governing the granting of exclusive licenses provide that reasonable royalties shall be charged by DOE unless it determines that charging royalties would not be in the best interest of the United States and the general public. This authority permits DOE to defer royalties on exclusive licenses.

Background

A commercial firm or individual may request exclusive or nonexclusive licenses from DOE to commercialize government-owned inventions. An exclusive license allows a firm or individual the sole right under the patent to commercialize the invention. A nonexclusive license allows many firms or individuals the right to commercialize the invention.

Traditionally, DOE grants nonexclusive licenses royalty-free.¹ DOE believes it has the discretion to issue nonexclusive licenses for GOCO inventions on a royalty-free basis. DOE's rationale for not charging for nonexclusive licenses has been the recognition that royalties charged to commercial concerns represent a cost of business that will typically be factored into the ultimate price charged to the consumer for a licensed

¹Although it has been DOE's general policy to provide nonexclusive licenses on a royalty-free basis, we found that, in some cases, DOE has charged royalties for nonexclusive licenses on GOCO inventions. DOE is also presently considering charging royalties on a few pending nonexclusive license applications.

product. DOE stated that because the U.S. taxpayer/consumer has already paid for the underlying federal research and development, adding a royalty to the sales price of a licensed product would result in the taxpayer/consumer's having, in effect, to pay twice for the research.

DOE typically charges royalties on domestic exclusive licenses based on a percentage of sales. However, in some cases, licensees are not required to pay royalties until a specified number of products are sold or a specified dollar amount of sales is reached. This practice, royalty liability deferment, serves as an incentive to firms to commercialize inventions. The deferment terms are established in the license negotiations between DOE and potential licensees.

DOE has cited Public Law 96-517 as its legal basis for granting royalty-free licenses and for deferring royalty payments for domestic exclusive licenses.

DOE's Discretion to Charge Royalties

The provisions of Public Law 96-517 give DOE and other federal agencies considerable discretion in whether to charge royalties for the use of patents. The law specifically authorizes federal agencies to grant nonexclusive, exclusive, or partially exclusive licenses under federally owned patents, either royalty-free or for royalties or other considerations. DOE has implemented this authority in its patent regulations. The regulations (10 CFR 781.51) pertaining to nonexclusive licenses provide that reasonable royalties may be charged on DOE inventions. Included among the factors to be considered in determining whether to charge royalties or the amount thereof are

- whether the applicant is a small business, minority business, or business in an economically depressed, low-income, or labor surplus area;
- the extent of the U.S. government's contribution to the development of the invention; and
- the extent of effort necessary for the licensee to bring the invention to the point of practical or commercial application.

DOE regulations indicate that the decision concerning whether to charge royalties for a nonexclusive license will be made on a case-by-case basis after considering the above-listed factors.

In our opinion, Public Law 96-517 and its implementing regulations authorize DOE to issue royalty-free, nonexclusive licenses when it determines that course of action to be in the public interest and consistent with the criteria it has established.

With regard to the issue of DOE's authority to defer royalty payments on exclusive licenses, we believe Public Law 96-517 also governs that question. That statute allows DOE to forego royalties or to charge royalties on such terms and conditions as is in the public interest. DOE's regulations governing the granting of exclusive licenses (10 CFR 781.52(d)(4)) provide that reasonable royalties shall be charged by DOE unless it determines that charging royalties would not be in the best interest of the United States and the general public.

This authority would permit DOE to defer royalties on exclusive licenses where it determined that such deferral would serve the public interest. DOE's justification for royalty deferral is to serve as an incentive to a licensee to invest risk capital so the invention can be brought to the point of practical or commercial applications, which otherwise might not be accomplished.

DOE's Use of Martin Marietta Energy Systems' Royalties to Perform Mission Work

Requester's Question:

Can DOE use Martin Marietta Energy Systems' royalty income to perform DOE mission work at the GOCO facilities Energy Systems operates without violating restrictions on DOE's augmenting its appropriation?

In a June 25, 1985, letter to the Chairman, Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, the DOE General Counsel, on behalf of the Secretary of Energy, stated using Martin Marietta Energy Systems' royalties to perform DOE mission work would not violate the requirements prohibiting DOE from supplementing its appropriation. He stated in the letter this could be avoided by DOE's entering into a joint cost-sharing collaborative arrangement with Energy Systems in which royalty income could be used in part to fund the arrangement. Since this arrangement has not been completed, it would be premature for us to address the legality or propriety of it at this time since substantial changes might well be made. Based on our understanding of the information presented to us, these arrangements do not appear to present augmentation problems.

Background

On April 30, 1984, Martin Marietta Energy Systems submitted a proposal to DOE to amend its contract for the management of DOE's GOCO facilities at Oak Ridge, Tennessee, and Paducah, Kentucky. (See app. XI.) This proposal would permit Energy Systems to obtain, in advance, a waiver from DOE of the requirement to turn over title to many inventions developed under the contract to DOE. Under the proposal, Energy Systems would dedicate royalty income it received from licensing these inventions (after deducting a percentage of the royalties for the inventor) to perform additional technology transfer initiatives on DOE projects and activities at the GOCO facilities. Energy Systems noted that without the requested advance waiver (as a large for-profit business), it would have to petition DOE for a waiver of rights on each invention on a case-by-case basis, a procedure which it described as cumbersome and time-consuming.

On December 10, 1984, DOE prepared a final draft of an advance patent waiver agreement with Energy Systems. Since further action on the draft was suspended pending the development by DOE of a class waiver for all for-profit GOCO contractors, this draft is the most concrete expression of DOE's intentions concerning the use of Energy Systems' royalties. Under the agreement, costs associated with filing and prosecuting patent applications, maintaining the issued patents, and negotiating licenses on waived inventions would be allowable costs under the DOE contract for up to \$200,000 per year for 4 years. These costs would be

"reimbursed" out of contractor overhead funds designated for technology transfer activities.

The December 10, 1984, draft agreement also proposed that a portion of the royalty income Energy Systems received from licensing inventions developed under the contract would go to the inventors. Then, royalties received by Energy Systems up to an amount equal to 5 percent of the annual budget of the research and development contracts for the DOE facilities it operates would be deposited in a separate account under the contract to support technology transfer activities. For royalties exceeding 5 percent of the budget, 75 percent would be paid to the general fund of the U.S. Treasury and 25 percent would be used by the contractor for technology transfer activities (apparently in the same manner as the amount equal to 5 percent of the research and development budget). This allocation is similar to that provided for small business and nonprofit GOCO operators under Public Law 96-517, the Patent and Trademark Amendments Act of 1980, as amended by Public Law 98-620.

Finally, pending negotiations with DOE, Energy Systems has put in escrow \$90,000 of royalty income it earned from licensing inventions developed at the DOE facilities it manages. Also, DOE has provided Energy Systems \$200,000 in "seed money" as an allowable cost of licensing inventions developed at these facilities.

Contractor's Use of Royalty Income

The draft agreement apparently will not be consummated until DOE completes its development of a class waiver for all for-profit contractors. This development will include the consideration of public comments on the proposal. Accordingly, it would be premature for us to address the legality or propriety of the Energy Systems draft agreement as it now exists since substantial changes in that agreement might well be made. In theory, the payment of overhead costs related to GOCO contractor technology transfer activities and the return to the government of a portion of royalty income earned as a result of patent waivers granted by the government would appear to be legally available to DOE. We note that similar arrangements have been approved for small business and nonprofit GOCO contractors under Public Law 98-620. (See background to app. VIII.) However, we express no view as to whether the granting of blanket waivers to for-profit contractors is appropriate from a policy standpoint in the absence of similar legislative expression. In any event, we have addressed the augmentation issues raised by Representative Dingell's question.

Under the draft agreement, three uses of the income from the inventions developed by the contractor relate to the augmentation question: first, some funds are retained by the contractor and used to further the DOE mission; second, some funds are turned over to DOE under the agreement; and third, some funds remaining may be returned to DOE from a \$200,000 advance of seed money by DOE to the contractor. Based on our understanding of the information presented to us, these arrangements do not appear to present augmentation problems.

First, the funds used to support technology transfer would not constitute an augmentation because they are retained by the contractor and are not given to DOE. Under the proposed agreement, it appears that royalty funds will be retained by Energy Systems and deposited in a separate account under the contract, as part of a joint cost-sharing arrangement. The relevant statute, 31 U.S.C. 3302 (1982), deals only with amounts received by the government and which are to be deposited in the general fund of the Treasury. This provision is intended to prevent agencies from augmenting their appropriations by receiving funds from nongovernment sources and retaining them for use in their programs. Energy Systems' activities under the agreement do not constitute a prohibited augmentation of DOE's appropriations. Energy Systems, as part of the cost-sharing arrangement, will use the royalties toward commercializing inventions. In doing so, it will advance its own interests as well as promote DOE's interest in furthering technology transfer. While the encouragement of technology transfer has been sanctioned by both the Congress and the administration, there is no requirement that this be accomplished solely through the use of the agency's appropriated funds. Accordingly, based on our understanding of the proposed arrangement, there would be no violation of law. However, since this arrangement has not been completed and is subject to change, our view on its legality may change.

Second, the payment to the government of a portion of the receipts from the licensing of patents would not be an augmentation because these receipts are to be deposited in the Treasury as miscellaneous receipts under the terms of the proposed agreement.

Third, to the extent that the \$200,000 seed money is repaid to DOE, it must be deposited in the general fund of the Treasury to avoid an improper augmentation of the appropriation from which it came. Since in making the payment, the appropriation presumably would be expended for an authorized purpose, any later reimbursements would not be for credit to the appropriation. If returns of payments of this

kind were available for reobligation, the appropriation would in effect become a revolving fund. It has been a long-standing rule that revolving funds must be specifically authorized. No such specific authority is present in this case.

Under Title III of the Energy and Water Development Appropriation Act for fiscal year 1986, Public Law 99-141, November 1, 1985, 99 Stat. 564, 573-4, the appropriation provision for DOE's departmental administration provides that miscellaneous revenues may be used for operating expenses under that account, provided that the appropriation is reduced by the amount of such revenues received. The authority available to DOE under Public Law 99-141 to offset receipts against a reduction in an appropriation is not available since this provision applies only to "miscellaneous revenues." The recovered amounts, previously obligated and expended, are not revenues.

Nonprofit and Small Business GOCO Contractors' Use of Royalty Income

Requester's Questions:

How much discretion do nonprofit and small business contractors have to spend royalty income generated from inventions developed at a GOCO facility on activities carried out outside of that facility?

To what extent does an agency such as DOE have authority to determine or review how such royalty income is used?

The patent provisions of Public Law 98-620 appear to allow small business and nonprofit GOCO contractors to use royalty income to carry out specified activities at places other than at the facility where the invention was developed. In addition, the public law does not specify to what extent agencies such as DOE can direct or control the use of these royalty funds.

Background

Section 202, Title 35, U.S. Code, added by Public Law 96-517, the Patent and Trademark Amendments Act of 1980, generally provided that nonprofit organizations or small business contractors may elect to retain title to inventions they develop under government funding agreements. Title V of Public Law 98-620 extended this provision to small business and nonprofit GOCO contractors. It also amended subparagraph (c) of Section 202 of Public Law 96-517 to require that each funding agreement between the agency and the contractor specify how royalties earned by the contractor shall be used.

In amending Public Law 96-517, Public Law 98-620 directs contractors to use royalties earned from licensing GOCO inventions for scientific research, development, and education consistent with the research and development mission and objectives of the GOCO facility. In addition, Public Law 98-620 allows contractors to deduct costs and expenses incidental to licensing GOCO inventions from the royalties they earn. Finally, Public Law 98-620 limits the amount of royalties contractors may use for scientific research to an amount equal to 5 percent of the annual budget of the GOCO facility.

In developing regulations to implement Title V of Public Law 98-620, the Department of Commerce has not required that the royalties generated from a contractor's licensing of inventions developed at a GOCO be used at the GOCO facility where the invention was developed. Section 401.5(f) of the Department of Commerce's draft of the final implementing regulations pertains to the use of royalties by a nonprofit organization operating a government-owned facility. An earlier version of the proposed

regulations which Commerce published in order to obtain public comment (50 F.R. 13524, Apr. 4, 1985) limited the use of the income to activities "at the facility." However, this was deleted from the final draft regulations. Section 401.5(f) now merely repeats the statutory language dealing with this issue.

Contractors' Use of Royalties

Neither the statutory provision nor its legislative history reveals an intention to prevent the available income from being used at locations other than at the facility from which the income derives. Therefore, the contractor has the discretion to use the income at another place. However, this discretion is restricted. It must be for "scientific research, development and education" activities. Further, these activities must be "consistent" with the research and development mission activities and objectives of the facility the contractor operates. Accordingly, the use of these funds at another laboratory or at the campus of a university contractor is permissible, provided the standards contained in Public Law 96-517 are observed.

The applicable law provides flexibility for the contractor to determine which activities within the permissible categories may be funded from the royalties. For example, it gives no priority to research over education or development over research. All are equally allowable. Therefore, the contractor may determine the appropriate use of the royalty income consistent with Public Law 96-517. Incident to its responsibilities relating to a contract, an agency such as DOE may review the propriety of the use of the royalty income to determine the contractor's compliance with the statute. The agency may prescribe regulations consistent with the statute and take appropriate enforcement action when necessary.

DOE's Authority to Take Action Against GOCO Contractors Whose Licensing Practices Have Produced Anticompetitive Effects

Requester's Question:

What statutory authority does DOE have to invoke march-in rights against its GOCO contractors whose licensing activities have substantially lessened competition or resulted in undue market concentration?

Background

Section 9(h) of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5908) allowed DOE to require the granting of nonexclusive or partially exclusive licenses, or to terminate waivers or licenses, where the waiver or licensing actions had "tended substantially to lessen competition or result in undue market concentration in a section of the United States in any line of commerce to which the technology relates" These provisions are referred to as march-in rights. (See app. IV for further explanation.) Section 9(h) of the Nonnuclear Act was repealed by the Patent and Trademark Amendments Act of 1980 (P.L. 96-517).

Use of March-In Rights

Under authority contained in section 9(h) of the Federal Nonnuclear Act of 1974, DOE established regulations (41 CFR Section 9.9.109-6), which enabled DOE to exercise march-in rights for patent waivers DOE grants if the waiver tended to produce anticompetitive effects. In repealing Section 9(h), Public Law 96-517 eliminated the statutory provision contained in the Nonnuclear Act which required DOE to invoke march-in rights against both large for-profit GOCO contractors as well as small business and nonprofit GOCO contractors if their licensing activities produced anticompetitive effects.

In repealing the march-in rights contained in the Nonnuclear Act, Public Law 96-517 established its own provisions for small business and nonprofit contractors. However, these provisions excluded anticompetitive effects as a basis for invoking the rights. Therefore, Public Law 96-517 does not empower DOE to invoke march-in rights when its nonprofit or small business GOCO contractors' licensing activities produce anticompetitive effects.

In 1984 Public Law 98-620 extended the same march-in rights contained in Public Law 96-517 to for-profit contractors. Therefore, Public Law 98-620 does not provide DOE the statutory authority to exercise march-in rights against its for-profit GOCO contractors if their licensing activities produce anticompetitive effects.

DOE's Authority Regarding Invention Utilization Reporting

Requester's Questions:

Does Public Law 96-517, as amended, require DOE to withhold invention utilization information reported to it by small business and nonprofit GOCOS?

Does Public Law 96-517, as amended, supersede DOE's authority, as contained in the Federal Nonnuclear Energy Research and Development Act of 1974, to require invention utilization reports from large for-profit GOCO contractors?

Does DOE have statutory authority to disclose for-profit invention utilization reports to the public?

Background

Section 9(h) of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5908 (h)) provided that each waiver of rights or grant of an exclusive or partially exclusive license should contain terms and conditions that the Secretary of Energy determines to be appropriate, including "... Periodic written reports at reasonable intervals, and when specifically requested by ... [the Secretary] on the commercial use that is being made or intended to be made of the invention." The requirement for these reports (42 U.S.C. Section 5908 (h)) generally referred to as utilization reports, was repealed by Section 7(c) of Public Law 96-517, the Patent and Trademark Amendments Act of 1980.

Invention Utilization Reporting

According to Section 202(c) (5), of Title 35, U.S.C., as added by Public Law 96-517, each agreement with a small business or nonprofit GOCO contractor shall include the right of the federal agency involved to require periodic reporting on the utilization of inventions or efforts at obtaining utilization by the contractor or his licensees or assignees. The statute further provides that the information "may" be treated as privileged and confidential commercial and financial information not subject to disclosure under the Freedom of Information Act (5 U.S.C. Section 552) by the agency involved. However, Section 501(6) of Public Law 98-620 amended Public Law 96-517 by changing "may" to "shall" so that withholding of utilization reports is now mandatory. Accordingly, while DOE can require such contractors to submit invention utilization reports, DOE is required to withhold invention utilization information received from nonprofit and small business GOCO contractors from public disclosure.

While DOE may also require utilization reports for large for-profit operators, it is not specifically required to do so by statute. Public Law 96-

517's repeal of paragraph (h) of the Nonnuclear Act relieved DOE of the mandate to require a utilization report on the commercial use being made of an invention. While Public Law 96-517 contained a provision to require periodic reporting on invention utilization, this requirement was specifically limited to small business and nonprofit organizations.

We are also aware of no provision of law which prohibits DOE from disclosing nonsmall business utilization reports to the public. However, consistent with the President's February 18, 1983, memorandum on government patent policy, DOE may pursue a policy of not making utilization reports available to the public for large for-profit contractors not covered by Public Law 96-517, as amended, subject to the Freedom of Information Act.

DOE's Negotiations With Martin Marietta Energy Systems Concerning Patent Policy

Requester's Question:

What are the major provisions in the proposed agreement between DOE and Martin Marietta Energy Systems?

In 1984 negotiations took place between the DOE Oak Ridge operations office and Martin Marietta Energy Systems, the contractor for DOE's Oak Ridge, Tennessee, and Paducah, Kentucky, facilities regarding Energy Systems' request to retain title to inventions developed at the two facilities. As requested, the information presented below discusses the status of the negotiations and major provisions contained in a December 10, 1984, "final draft" of an "Advance Patent Waiver" that the DOE Oak Ridge office was negotiating. The information presented was developed from our review of documents provided by DOE and Energy Systems relating to the patent negotiations and discussions with DOE and Energy Systems' officials. In early 1985 DOE suspended negotiations with Energy Systems until DOE issued a class waiver covering invention titles for for-profit contractors.

Background

On April 30, 1984, Energy Systems requested DOE to grant an advance waiver of title to inventions developed under GOCO contract DE-AC05-84OR21400, which governs Energy Systems' operation of three DOE facilities at Oak Ridge, Tennessee, and one at Paducah, Kentucky. The advance waiver would, with certain exceptions, give Energy Systems the right to patent inventions conceived under the contract.

Negotiations between the DOE Oak Ridge operations office and Energy Systems resulted in a draft waiver agreement dated December 10, 1984. The negotiations were suspended in early 1985. According to DOE's Assistant General Counsel for Patents, DOE has decided to include the Oak Ridge request under a class waiver, which will set forth patent provisions covering all for-profit GOCO contractors. (See app. I.) The Oak Ridge patent counsel told us that the December 10, 1984, draft was the most current version of the advance waiver when negotiations were suspended.

Provisions Contained in the Draft Advance Patent Waiver

The December 10, 1984, final draft of the advance patent waiver negotiated between DOE and Energy Systems included 17 pages of provisions describing how patent rights would be handled. Some of its major provisions include the following.

Title to Inventions

Under the advance waiver, DOE would waive its title to Energy Systems for all inventions generated under the contract except inventions in certain classes of technology. Thus, Energy Systems would not have to submit individual identified invention waiver requests to DOE to obtain title to such inventions. Inventions in the following areas would be excluded from this provision:

- Nuclear weapons technology.
- Enrichment technology.
- Fusion technology.
- Nuclear waste disposal, storage, and transportation technology.
- Any other programmatic area of technology certified by DOE headquarters to be in the national interest for the government to retain title.
- Subject matter which is classified or is controlled under Section 148 of the Atomic Energy Act of 1954.

In addition, inventions covered in international agreements of the U.S. government and by existing class waivers granted by DOE would also be excluded. Existing DOE class waivers are discussed in appendix I.

In the classes of inventions, which are excluded from the advance waiver, however, Energy Systems would receive sole, irrevocable, royalty-free licenses with the sole right to grant sublicenses for the excepted classes of technology in which the government acquires title. The licenses would extend to Energy Systems' domestic subsidiaries and affiliates. In cases where Energy Systems decided not to retain title to an invention and the government acquired title, Energy Systems would retain an irrevocable, nonexclusive, royalty-free license to the invention.

Patent Costs

Costs in connection with filing and prosecuting any domestic or foreign patent application, maintaining the issued patents, and direct costs associated with negotiating licenses on waived inventions would be allowable costs under the DOE contract up to \$200,000 per year for 4 years. These costs are to be reimbursed out of contractor overhead funds for technology transfer activities.

Disposition of Royalties

Energy Systems would deposit royalties in a separate contract account to be used to support the technology transfer and research and development activities under the contract. The royalties deposited in the contract account would first be reduced "... by an appropriate percent of the received royalties from granting of licenses." This means inventors

would receive royalties first—the percentage allowed would be approved at the operations office with general guidance from headquarters, according to Oak Ridge operations office patent counsel. If the balance of royalties received, after the above deduction, exceed 5 percent of the annual budget of the research and development contracts of the Oak Ridge, Tennessee and Paducah, Kentucky facilities, 75 percent of the excess is to be paid to the U.S. Treasury and the remaining 25 percent would be used for technology transfer and research and development.

Energy Systems Licensing Activities

Energy Systems would act as the sole licensing agent for waived inventions and would have the authority to issue exclusive licenses. Although Energy Systems agreed to use language that is acceptable to DOE in the license agreements, Oak Ridge operations office patent counsel and Energy Systems' patent counsel said that DOE would not be involved in negotiating the business terms of the licenses, such as the setting of royalties.

If Energy Systems wished to license its parent corporation, Martin Marietta Corporation, Energy Systems would have to obtain DOE's patent counsel's approval of the proposed license terms and conditions and royalty negotiations. The agreement is silent as to whether these provisions could apply to situations in which Energy Systems wished to license an affiliated corporation other than its parent corporation.

Notice Requirement

When reviewing DOE proposals or recommending new work under the contract, Energy Systems would be required to notify DOE if contract inventions waived to Energy Systems are involved. This notification is to minimize contractor bias in work reviews and proposals that could occur owing to contractor ownership of the title to the technologies involved, according to DOE's General Counsel.

Assignment of Rights

If the Energy Systems contract with DOE was terminated, Energy Systems would assign its right, title, and interest in subject inventions and the right to receive royalties from license agreements to DOE or any successor contractor as DOE might designate, retaining only irrevocable, nonexclusive, royalty-free licenses.

Requests for copies of GAO reports should be sent to:

U.S. General Accounting Office
Post Office Box 6015
Gaithersburg, Maryland 20877

Telephone 202-275-6241

The first five copies of each report are free. Additional copies are \$2.00 each.

There is a 25% discount on orders for 100 or more copies mailed to a single address.

Orders must be prepaid by cash or by check or money order made out to the Superintendent of Documents.

United States
General Accounting Office
Washington, D.C. 20548

Official Business
Penalty for Private Use \$300

Address Correction Requested

First-Class Mail
Postage & Fees Paid
GAO
Permit No. G100